103

MAINTAINING THE HEALTH AND PRODUCTIVITY OF THE GULF OF MEXICO

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Maintaining the Health and Producti...

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THE

SUBCOMMITTEE ON OCEANOGRAPHY, GULF OF MEXICO, AND THE OUTER CONTINENTAL SHELF

OF THE

COMMITTEE ON
MERCHANT MARINE AND FISHERIES
HOUSE OF REPRESENTATIVES

ONE HUNDRED THIRD CONGRESS

FIRST SESSION

ON

COORDINATION BETWEEN THE FEDERAL GOVERNMENT, THE STATES AND CIVILIAN COMMUNITIES TO SUSTAIN AND DEVELOP THE NATURAL RESOURCES OF THE GULF OF MEXICO

APRIL 23, 1993—CORPUS CHRISTI, TEXAS

Serial No. 103–21

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MAINTAINING THE HEALTH AND PRODUCTIVITY OF THE GULF OF MEXICO

FRIDAY, APRIL 23, 1993

House of Representatives, Subcommittee on Oceanography, Gulf of Mexico, and the Outer Continental Shelf, Committee on Merchant Marine and Fisheries,

Corpus Christi, TX.

The Subcommittee met, pursuant to notice, at 9:00 a.m., at Corpus Christi State University, Corpus Christi, Texas, the Honorable Solomon P. Ortiz [chairman] presiding.

Present: Representatives Ortiz, Hochbrueckner, Green and Fields.

Staff Present: Sheila McCready, staff director; Robert L. Wharton, senior professional staff; Lisa Pittman, minority counsel; Liz Megginson, staff director/counsel; Bill Wright, professional staff; and Katherine Gibbens, clerk.

STATEMENT OF THE HON. SOLOMON P. ORTIZ, A U.S. REPRESENTATIVE FROM TEXAS, AND CHAIRMAN, SUBCOMMITTEE ON OCEANOGRAPHY, GULF OF MEXICO, AND THE OUTER CONTINENTAL SHELF

Mr. Ortiz. The hearing will come to order.

First of all, I want to thank you and CCSU for hosting us this morning. Of course, I am proud of the University's accomplishments, and look forward to its emerging growth and excellence. When the staff walked in, all of a sudden they wanted to go to school again after they saw the campus.

I would like to welcome all of you here today on behalf of the Subcommittee on Oceanography, Gulf of Mexico, and the Outer Continental Shelf.

Today, our focus will be on the role of the Federal Government in maintaining the health and productivity of the Gulf of Mexico, and how we may best coordinate our efforts, on a Federal level, with State agencies and others who have a stake in sustaining and developing these resources of the Gulf.

Those of us who have lived close to the Gulf of Mexico have a unique appreciation of the value of this precious natural resource. In addition to its profound beauty, which we all enjoy, the Gulf also makes a vital contribution to the regional and national economy, through its ports, oil and gas leases, fisheries, and tourism.

The Gulf of Mexico, of course, is not immune to problems. There is a growing concern that the health and productivity of the Gulf has deteriorated in the last decade. This is due, in part, to increased population on the Gulf coast, and a higher demand upon its resources. We must increase our efforts to perform the necessary research on the Gulf so that we can more accurately assess its health. We must fund, administer, and coordinate necessary programs in order to avoid decreases in waterfowl and marine wildlife, loss of wetlands and increased threats to human health from pollution, while still preserving the economic viability of the Gulf of Mexico.

I feel that coordination between the Federal Government, the states and the academic and civilian communities is essential in order to maintain the health and productivity of the Gulf of Mexico which, in turn, enhances the economic prosperity of the Gulf region. I believe that we must listen to the State governments, the local communities and the users of the Gulf, whose interest and expertise in matters relating to the Gulf may be more precise than our own. I believe that together we can work to preserve and improve the economic and ecological value of the Gulf of Mexico.

We have a wide variety of representatives visiting us today in Corpus Christi from a number of Federal agencies, representatives from the Gulf States, the region's academic community, as well as representatives of civilian use groups, all of whom I would like to welcome at this time.

I hope that the outcome of today's hearing will clarify the Government's, as well as other organizations' responsibilities to the Gulf of Mexico, and the people who live on the coast and use these resources.

Before we begin, I would like to welcome all of the other members of the Subcommittee this morning, and open the proceedings for any opening statements. We are so happy to have these members with us today and, of course the staff. These people not only are my colleagues, but they are also my friends.

First, I would like to recognize my good friend Jack Fields, who is the Ranking Republican on the Full Committee, and we are so happy to have him with us today.

Jack, do you have an opening statement?

STATEMENT OF THE HON. JACK FIELDS, A U.S. REPRESENTATIVE FROM TEXAS, AND RANKING MINORITY MEMBER, COMMITTEE ON MERCHANT MARINE AND FISHERIES

Mr. FIELDS. Mr. Chairman, I do. As you can imagine, there are a few other things happening in my life at this particular moment, but I am here for several important reasons, first of all, my deep friendship with Chairman Ortiz. If I am not his biggest fan, my wife is. Secondly, I want to underscore the importance of his chairmanship of the Oceanography Subcommittee, not only to this particular Congressional District, but to the entire State of Texas.

I do not think anything underscores that more than this is the first time that I am aware of that the Oceanography Subcommittee has traveled to this area of the country. I think this visit is long overdue, given the undisputed importance of the Gulf of Mexico to our nation's prosperity. If you base any measurement, it is clear that the Gulf of Mexico is a vital natural resource.

For instance, 40 percent of the U.S. commercial fish yield is taken from the Gulf of Mexico, and our shrimp fisheries contribute $600 million annually to our economy. Furthermore, nearly half of our nation's wetlands are located along the shores of the Gulf of Mexico. These wetlands provide crucial estuary habitat for large populations of finfish, shellfish and migratory waterfowl.

Drawn to our abundant natural resources and the beauty that we all saw when we drove to Corpus Christi State University, Gulf tourists contribute over $20 billion a year to our economy.

The Gulf of Mexico is also important to our national security and our defense. Gulf ports handle 45 percent of all cargo shipped, and 11 of the 20 largest U.S. ports are located in the Gulf of Mexico.

For the past 12 years, I have had the privilege of representing the Port of Houston. The Port provides jobs for nearly 160,000 Texans, then processes some 67 and a half million tons of foreign cargo in 1991 alone. Our region also produced some 97 percent of our nation's off- shore gas and 83 percent of its offshore oil.

Mr. Chairman, having mentioned all of these positive things, I am surprised to learn of the relative scarcity of Federal programs for the Gulf of Mexico area as compared to the Great Lakes Region.

We must also remember that as great as the Gulf's contribution to our nation is, it has also made some significant sacrifices. The Gulf acts as the waste receptacle for two-thirds of the continental United States, as the vast Mississippi River empties into the Delta area, bearing silt, pollutants and other ills from as far away as Montana. As we all know, pollution knows no international boundary, and the Gulf must bear assaults from Mexico and other Caribbean nations.

While the Gulf enjoys tremendous wetland resources, these are disappearing at an alarming rate, as much as 25 square miles a year in some cases. Scientists have also discovered huge shifting areas of oxygen-dead waters. Therefore, Mr. Chairman, I am going to be very interested today in hearing from our distinguished witnesses regarding Federal programs in the Gulf. Again, I just want to say how much I think it is important that you are chairman of this particular Subcommittee. Again, it is not only important for this Congressional District, but I think it is paramount for our state. I am very proud to be here with you.

Finally, our friend, Congressman Greg Laughlin has been diligently working to develop legislation to ensure that the Gulf of Mexico receives the attention it deserves and, perhaps more importantly, its fair share of Federal funds. I commend Congressman Laughlin for his efforts and I will certainly work with him to enact this important legislation.

Thank you, Mr. Chairman.

Mr. ORTIZ. Thank you. Thank you very much.

We have another member who has been a friend of ours for many years. He served on the legislature for 20 years. He is the Vice Chairman of the Subcommittee, Mr. Green. He is from Houston, Texas.

STATEMENT OF THE HON. GENE GREEN, A U.S. REPRESENTATIVE FROM TEXAS

Mr. Green. Thank you, Mr. Chairman. I would also like to thank the Chairman for calling the hearing, but also Corpus Christi State University and also the city of Corpus Christi for all of their hospitality. I am not a stranger to Corpus. I have been here for legislative hearings over many years, although serving on the Insurance Committee, it was always after a storm came in, to make sure that the industry also responded to our needs. Coming from Houston, a district that is an urban area in Houston, I recognize the importance of this Subcommittee.

I am honored and proud to serve with Chairman Ortiz. I think it is so important.

I would like to associate my remarks with the Chairman and what Congressman Fields said—the Gulf of Mexico is so important. Even though I have only served in Congress now for a little over three months, I recognize that we need more attention from the Federal Government to the Gulf of Mexico.

As a legislator I know, over the years, there has been attention by the State and Gary Martin our land Commissioner—in fact tomorrow, those of you who have time, it is the Annual Beach Peanut Day. I have been to that on Galveston and I know there are places here in Corpus, all along the coast, to raise the consciousness of what happens to our coast from offshore dumping or the currents, either one.

I appreciate the chance to be here and, again, even though I am a veteran from the legislature for many years, I am still a freshman in Congress, and learning. I will follow the Chairman's lead, and make sure we do the best we can for the Gulf of Mexico.

Thank you Mr. Chairman.

Mr. Ortiz. Thank you, Gene.

We also have another friend. George is no newcomer to this area. George Hochbrueckner, from the State of New York. I can remember when he had just been elected. He was kind enough—when he was making a tour he came here to Corpus Christi. We were in the process of looking at the Home Port site. We just happened to be good friends and we served on the same Committee. He is a member of the Armed Services Committee as well as the Merchant Marine and Fisheries Committee.

Mr. Hochbrueckner, he has a good Spanish name—Hochbrueckner.

STATEMENT OF THE HON. GEORGE HOCHBRUECKNER, U.S. REPRESENTATIVE FROM NEW YORK

Mr. Hochbrueckner. Thank you, Mr. Chairman. I am certainly delighted to be here. As the Representative from Long Island, New York, I represent the eastern half of Long Island, of course, we share many concerns, even though we are over a thousand miles away. We share concerns about the water, certainly the environment, and we have many common areas.

For example, you have a beautiful beautiful place here, as we do on Long Island. Obviously, we have a great concern about maintaining the environment and concern about our fisheries, our tourism. So, while we may be distant geographically, clearly, we have many common problems that we are concerned about. So, I am very pleased to be here.

As Solomon indicated, seven years ago I was delighted to be educated as to some of the concerns of Corpus Christi at that time. At that time the focus was Home Port. I was pleased—and certainly now for seven years serving with the Chairman on the House Armed Services also, we have been able to work very closely together on the Merchant Marine and Fisheries' concerns, as well as Armed Services.

I would like everyone to note the fact that this year the Subcommittee's title was changed, and it is now the Subcommittee on Oceanography, Gulf of Mexico, and the Outer Continental Shelf. I think that is not only a tribute to our new Chairman's clout to change the name, but it clearly is an indication of his concern for this region, and what must be done to help maintain and restore as is necessary.

So, clearly, I have seen your Congressman rise in stature in my seven years as a Congressman on the two Committees. I am, of course, delighted to be here today to learn more about your concerns. Also, I am delighted to call your Congressman Mr. Chairman.

Thank you.

Mr. ORTIZ. Thank you, George.

Unfortunately, Congressman Laughlin could not be with us today; but he has a deep interest in the Gulf of Mexico legislation. We work with him very very closely. He is a dear friend.

Without objection, his statement will be included for the record at this time.

[The information referred to follows:]

STATEMENT OF HON. GREG LAUGHLIN, A U.S. REPRESENTATIVE FROM TEXAS

I am pleased to announce that I will be reintroducing the Gulf of Mexico Economic and Environmental Protection Act again this session.

Having grown up on the Gulf and representing the district in Texas with the most coastline along the Gulf of Mexico, I have long been committed to raising the priority of Gulf of Mexico issues.

In fact, the Sunbelt Caucus' Gulf of Mexico Task Force, of which I am a co-chair, has been a leader for more than four years in raising the awareness of the Gulf of Mexico in this administration and the past.

The Task Force was formed in 1990. Since then, it has accomplished a great deal.

For example, the Task Force initiated discussions with former EPA administrator Reilly which resulted in a tremendous increase in funding for the Gulf. Talks are currently being initiated with the current EPA administrator, Carol Browner.

I also introduced a caucus bill last Congress which was signed by former President Bush designating 1992 "The Year of the Gulf of Mexico."

I have been working with my colleague from Alabama, Sonny Callahan, and the Sunbelt Caucus' Gulf of Mexico Task Force for more than a year on the comprehensive legislation I will be introducing next week.

This legislation is the product of meetings with all of the relevant Federal agencies, the States, and congressional committee staff. The bill will focus on improving water quality in the Gulf of Mexico, reducing coastal erosion, ameliorating the economic loss of fisheries in the Gulf, and other economic and environmental issues as appropriate.

This legislation will formally establish the Environmental Protection Agency's Gulf of Mexico Program. The Gulf of Mexico Program should be an inter-agency program, so that agencies can coordinate their activities and avoid wasteful overlapping efforts.

Our bill will establish a Gulf of Mexico Board that includes representation from all Federal agencies with jurisdiction over the Gulf of Mexico, State governors or their appointees, the Chair of the Citizens' Advisory Committee, and a local coastal elected official from each State. Each member will have an equal vote in the development of the Gulf plan.

The involvement of coastal elected officials will ensure that local citizens have a much better idea of what is going on in the Gulf of Mexico than inside-the-beltway bureaucracies.

Our legislation ensures that those who deal with the Gulf every day are included in the decision-making process.

Another important aspect of our bill is that it ensures that environmental and economic problems that pose a threat to the Gulf of Mexico, including habitat degradation, marine debris, nutrient enrichment, toxic substances and pesticides, fresh water inflow, data and information transfer, public education and outreach, public health, coastal erosion, and living marine resources, are addressed comprehensively.

It is high time that the economic and environmental significance of the Gulf of Mexico be recognized. There are two such programs currently in existence to protect and manage the Chesapeake Bay and the Great Lakes.

Not only is the Gulf seven times larger than the Great Lakes but almost 200 times larger than the Chesapeake Bay.

More important is the incredible contribution the Gulf makes to our country and its great environmental value.

For example, not only have revenues historically ranked second only to the Federal income tax as a revenue source for the Federal Government, but at the same time, the Gulf provides critical habitat for 75% of the migratory waterfowl traversing the United States.

Not only do Gulf ports handle 45% of U.S. import-export shipping tonnage, but Gulf coastal wetlands comprise about half of the national total.

And furthermore, two-thirds of the continental U.S. and major areas of Cuba and Mexico drain into the Gulf and one-sixth of the U.S. population lives in States bordering the Gulf of Mexico.

Surely a body of water that is so rich in environmental resources, so rich in economic resources, and yet so impacted by the activities that are occurring as far away as Minnesota should get more Federal attention than it has historically.

In closing, I would like to thank the other co-chair of the Gulf Task Force, my distinguished colleague and friend Sonny Callahan and all of the other members of the Gulf of Mexico Task Force who have worked so hard in developing this legislation.

I would also like to give a special thanks to the Sunbelt Caucus without whose help we would not be introducing this legislation, and to Congressman Solomon Ortiz for submitting this statement in my absence.

Thank you.

Mr. ORTIZ. I am very much impressed with the panels this morning. Believe me, we are here to learn. We are here to listen to the different witnesses.

At this time I would like to briefly introduce our first panel, beginning with Mr. Jonathan Cannon. Mr. Cannon is the Acting Deputy Administrator for the United States Environmental Protection Agency.

Next is Mr. Donald Scavia, Director of the Coastal Ocean Program Office of the National Oceanic and Atmospheric Administration. Mr. Scavia is also currently Vice Chair of the Subcommittee on U.S. Coastal Ocean Science of the Federal Coordinating Council for Science, Engineering and Technology, which was formed to coordinate Federal coastal science efforts.

Mr. James Hanchey is the Director of Planning for the Lower Mississippi Valley Division, representing the United States Corps of Engineers.

We also have Mr. Conrad Fjetland, who is the Assistant Regional Director for Fisheries and Federal Aid, from the Southwest Region for the U.S. Fish and Wildlife Service.

We have Mr. Rogers Pearcy, who is the Regional Director from the Gulf of Mexico Region, representing the Minerals Management Service.

We also have Mr. Garry Mauro, who should be coming in in a few minutes. He is the Land Commissioner, of course, very well-known to this area, from the Texas General Land Office.

Before we proceed, I would like to remind each of the witnesses to try and limit your oral statements to five minutes. Your written testimony will be placed in the hearing records. I know it is very difficult. We will do our best not to interrupt you because we want to learn from you.

Again, thank you very much for being with us and we now proceed with the first witness, Mr. Cannon.

STATEMENT OF JONATHAN CANNON, ACTING DEPUTY ADMINISTRATOR, U.S. ENVIRONMENTAL PROTECTION AGENCY, ACCOMPANIED BY DOUG LIPKA, ACTING DIRECTOR, THE GULF OF MEXICO PROGRAM

Mr. CANNON. Thank you very much, Mr. Chairman, members of the Subcommittee. I would like to introduce Doug Lipka who is with me this morning, who is the Acting Director of the Gulf of Mexico Program. He has done a lot of good hard work in bringing that program to where it is today.

I have a written statement which I will submit for the record, and try to summarize my remarks briefly, as the Chairman has indicated.

The EPA has a lot of programs that affect the environment in and around the Gulf of Mexico. They include the bread and butter regulatory programs of EPA, such as water quality standard setting, the issuance of discharge permits for sources, wetlands protection and restoration, clean air programs and so forth. Today I am going to focus on one particular program that we take a lot of pride in, which is, in fact, a partnership between the EPA and the states of the Gulf, and other Federal agencies which have resources and authorities that are relevant to the Gulf of Mexico. That program is called the Gulf of Mexico Program.

I focus on this program specifically because I think it directly relates to the Subcommittee's concerns, and also because it offers a way of dealing comprehensively with the Gulf of Mexico as a natural system and also dealing with the economic realities of that system for the people who depend on it for their livelihood. I know we have representatives of those groups here today.

The Gulf of Mexico Program was started in 1988 as a result really of public meetings to express concerns over the incineration of hazardous waste in the Gulf. It is a program unique I think in EPA as having been started by citizens. Sharron Stewart is here today, and is one of the citizens who was instrumental in that event.

From its outset, this program has had some unusual features that I want to describe just briefly for you to give you a sense of what we are about here. These are features that are unusual at least for Government programs. First of all, it is participatory. It is not a top-down regulatory program of the sort that EPA is too often identified with. It seeks to involve the stakeholders of the area and to have them participate in decisions, in planning and implementation of plans that are agreed to. It has a very active Citizens Advisory Council with 25 representative selected by the governors of each of the five Gulf States. Its committees include representatives from the science community, the business community, the environmental community and others, in a very active consensus building process that serves as really the core function of the program.

Second, the program is based on the notion of partnership. I think every Federal and State agency that you see represented before you here at this panel and many others are represented on our policy review board, which is the guiding body for our program, and also on our management committee, which is the mid-level implementation group that we have devised.

In addition, we have in our program office, which is located in Stennis, Mississippi, not only EPA employees, but Corps of Engineer employees, Soil Conservation Service employees, Fish and Wildlife Service employees, NOAA employees all working together in a concept of shared leadership to make this program work and to give it the joint direction that it needs to be successful.

Partnership is an essential part of this program because nobody in this room, none of the Federal agencies, none of the states has within their power the ability to do the whole job. None of us has all of the authorities or the resources that is necessary to address the Gulf as a whole system. When you understand that, when you see that and understand it, it becomes absolutely clear that we have all got to work together. That is what the program is and has been trying to do.

There was an historic event in this program's history that took place last December, and a number of people, Commissioner Mauro and others were involved in that event in Tarpon Springs, where we, the Governors of each of the five states or their representatives, and the many Federal agencies that are involved signed a document. It is only a one page document, but it is a very important one page, which laid out a common goal for the Gulf of Mexico and its environment and its economy and also identified nine five-year environmental challenges that we were committing to as a group to carry out through our various programs, and through our cooperative efforts in the Gulf of Mexico. These five-year challenges include enhancing the sustainability of Gulf commercial and recreational fisheries, increasing Gulf shellfish beds by 10 percent, at least those that are safe for harvesting by 10 percent, and by reducing the amount of trash on beaches by 10 percent. Those are quite targeted goals. We are going to build our strategy around those, and we are going to be measured in five years by how close we come to achieving those goals.

In the meantime, we push forward with some concrete projects, and I will give just briefly some examples, so I do not take too much of your time. One of them we are quite pleased with is the rice fertilization project in the Colorado River Valley in Texas, where we worked with the rice farmers to reduce the amount of nitrogen that is applied to the crop land and, therefore, reducing the amount of nutrients that go into the water and cause problems.

We also are working with Louisiana, Alabama and Florida on shellfish restoration projects, trying to reduce the impacts of human sewage in those areas. We have got a seagrass restoration project being carried out in Mobile Bay, Alabama, and a habitat projection project in Graveline Bayou in Mississippi, all of which we have worked as facilitators and cooperators with other agencies and with State agencies as well.

We have also worked in the area of Marine debris. Commissioner Mauro has been a key participant in that—in trying to reduce the amount of Marine debris in the Gulf. I think we are having a session later on this month to carry that to the next step.

We sponsored two major environmental symposiums on the Gulf of Mexico which were very successful, the most recent one being in Tarpon Springs in December, as I mentioned. We have got a third symposium which we are planning to hold in Texas in 1994. We appreciate the Chairman's support, and the Subcommittee's support for that.

With that, let me stop and listen to the other testimony. I will be happy to answer any questions that you might have.

[The prepared statement of Mr. Cannon can be found at the end of the hearing.]

Mr. ORTIZ. Thank you very much.

Mr. Scavia.

STATEMENT OF DONALD SCAVIA, DIRECTOR, COASTAL OCEAN PROGRAM, NOAA

Mr. SCAVIA. Thank you very much, Mr. Chairman, and members of the Subcommittee. I am pleased and honored to be here today to talk to you.

NOAA sponsors a broad range of observational, assessment, research, management, and prediction services that are being used to address the growing concerns over the environmental quality and the economic sustainability of resources in the Gulf of Mexico. To improve our scientific knowledge of the Gulf's ecological systems, NOAA compiles data and information to describe and assess the current ecological status of the Gulf estuaries and coastal areas, conducts research related to natural processes and human impacts, and provides this information to other agencies responsible for managing the natural resources of the Gulf.

NOAA collects and archives extensive data files for oceanographic, geophysical, climatic, fisheries, wetlands, and pollution data for the Gulf of Mexico. NOAA's archives include, not only data collected conventionally, but also satellite data, monitoring sea surface temperature and land use changes, and their impact on environmental quality and fishery productivity.

NOAA has approximately 1,500 employees at 90 locations in Gulf States, and invests about $125 million annually. In the region, NOAA maintains coastal and marine research facilities, National Estuarine Research Reserves, and National Marine Sanctuaries. It oversees and provides implementation grants for Coastal Zone Management programs in four states, and is working closely with Texas to develop the fifth.

NOAA has direct ties to universities and colleges through the National Sea Grant College Program and its Coastal Ocean Science Program.

What I would like to do today is highlight a few specific examples of NOAA's activities in the Gulf that are of particular interest to the Subcommittee, and try to illustrate NOAA's cooperation with other Federal agencies, State agencies, and the academic sector.

NOAA is an active participant in EPA's Gulf of Mexico Program, through representation on the program's executive committee, policy review board, technical steering committee and subcommittees, and through an onsite coordinator for the Gulf of Mexico Program Office located at the Stennis Space Center. As I will discuss shortly, NOAA's science programs are also contributing to the development of the Gulf action plan.

NOAA is an active participant in EPA's five National Estuary Programs (NEP) in the Gulf. NOAA provides leadership on some NEP committees and contributes to the gathering and summarizing of existing knowledge on the state of these ecosystems.

In 1991, an agreement was signed between the U.S. Army Corps of Engineers and NOAA to initiate a national joint program to restore and create fish habitat. The program's goal is to increase marine fish and shellfish productivity and advanced restoration technology. It combines NOAA's technical fisheries expertise and the Corps' water resources planning, engineering, design, and construction capabilities. The program is implemented at the State and local level.

NOAA also administers the joint NOAA/EPA/Academic Regional Marine Research Program, overseeing development of nine regional marine research plans under the direction of Federal and state-appointed regional boards. The Gulf of Mexico Regional Board is expected to complete its plan for research in the next couple of months.

NOAA is an active participant in the Coastal America activities in the Gulf. Coastal America was established in 1991 as a partnership among four Federal agencies, and has grown recently to include nine, focusing on non-point source pollution, habitat alteration, and contaminated sediments.

Two projects of particular importance to NOAA in the Gulf are restoration of mangrove and seagrass habitats in Cockroach Bay, Florida, and efforts to stabilize more than 3,500 feet of eroding shoreline in Aransas, Texas.

NOAA has provided funds to support the Coastal Zone Management Programs for Gulf States, to support a variety of coastal initiatives. For example, the Alabama Program recently established the Alabama Coastal Foundation, dedicated to the conservation and natural economic resources of the Alabama coast.

The Florida Program has designated a construction setback line to protect beach and dune systems and a priority watershed management program to reduce non-point source pollution. The Louisiana Program has developed a geographic information system to facilitate the coastal permit review process. The Mississippi Program has developed enforceable special area management plans.

NOAA's Coastal Ocean Science Program addresses a broad range of Gulf issues. For example, it supports research on seagrass and tidal wetland habitats focusing in the Gulf on the effects of nutrient enrichment, diversion of freshwater flows, and wetland habitat loss and alteration.

In cooperation with EPA and the U.S. Fish and Wildlife Service, the program is using remote sensing to map seagrass from Tampa to Brownsville.

The Coastal Ocean Program's Nutrient-Enhanced Coastal Ocean Productivity Program, NECOP, is a major NOAA academic study now in its fourth year. It is analyzing physical, chemical, biological and geological processes that relate to nutrient enrichment "eutrophication" in the vicinity of the Mississippi-Atchafalaya River outflows and its impact on the life-sustaining oxygen levels in the bottom waters off Louisiana and Texas. These low levels of oxygen currently impact up to 4,500 square kilometers of resource habitat.

NECOP has developed and is testing a computer model that analyzes the impacts of lowering nutrient loads from the Mississippi drainage basin. The results of that model are being used by the Nutrient Subcommittee of the Gulf of Mexico Program to evaluate impacts of various nutrient control strategies.

NOAA's Coastal Ocean Management Planning and Assessment System, COMPAS, was developed by the National Ocean Service and the Coastal Ocean Program and implemented first in Texas. It is now being developed in the Florida Keys Marine Sanctuary.

The purpose of the COMPAS Program is fostering the cooperative process between NOAA and State governments on selected resource use topics. COMPAS integrates NOAA and State information within easy-to-use query, mapping, and analytical capabilities that result in powerful new computer tools for managing coastal resources.

In summary, NOAA recognizes the important economic and ecological contributions Gulf States make to the nation. NOAA's plan and expanded new programs will continue to support important work in the Gulf States. Over the next decade, Federal, state, and local governments will make decisions about the use of coastal waters and the resources that will determine whether these economically and environmentally important areas will continue to be valuable national resources to provide important goods and services to the nation.

As coastal issues become more complex and demanding, NOAA intends to play a greater role in the national effort to resolve challenging issues confronting the coastal oceans. NOAA is committed to safe-guarding the coastal ocean and its valuable resources and for keeping them productive for future generations. NOAA has been very active in the Gulf of Mexico region, and will continue to work with the region to help identify areas where we can continue to help.

NOAA is proud to be a partner in the effort to preserve and enhance resources in the Gulf of Mexico.

Mr. Chairman, that concludes my testimony.

[The prepared statement of Mr. Scavia can be found at the end of the hearing.]

Mr. ORTIZ. Thank you.

Mr. Hanchey.

STATEMENT OF JAMES R. HANCHEY, DIRECTOR OF PLANNING, LOWER MISSISSIPPI VALLEY DIVISION, U.S. ARMY CORPS OF ENGINEERS, ACCOMPANIED BY DENNIS BARNETT, SOUTH ATLANTIC DIVISION, U.S. ARMY CORPS OF ENGINEERS, AND SID TANNER, GALVESTON DISTRICT, U.S. ARMY CORPS OF ENGINEERS

Mr. Hanchey. Mr. Chairman and members of the Subcommittee, I am honored to be testifying before you today on the Army Corps of Engineers' activities designed to preserve and improve the Gulf of Mexico environment. Accompanying me today are Mr. Dennis Barnett, from our South Atlantic Division Office in Atlanta, and Mr. Sid Tanner, from our Galveston District.

My statement will focus on our current missions in the Gulf region, how they compare to our missions in other parts of the country, and the role the Gulf region plays in national programs administered by the Corps.

Our project-related activities of planning, construction and maintenance are carried out to implement our authorities for navigation, flood damage reduction and related purposes. Our budget authority for these activities in the Gulf States for fiscal year 1993 includes $29 million for 34 planning studies; $350 million for construction on 45 projects; and $433 million for operation and maintenance of 120 projects. Corps studies will be conducted in conformance with national guidelines and the Federal objective of project planning, which is to contribute to national economic development consistent with protecting the nation's environment.

Today, as in the past, our coastal ports and channels require maintenance dredging, and placement of this dredged material is a major environmental challenge. Our options include placement in estuarine open waters, designated ocean sites, diked upland sites, shallow water marsh establishment areas, beach nourishment areas and various combinations thereof. All placement options are coordinated with resource agencies and the general public, and specific steps are taken to comply with applicable environmental laws and regulations.

Our agency views dredged material as a resource, not a waste material. We seek opportunities for beneficial uses of dredged material, and have found that we can maintain navigation channels and concurrently produce environmental benefits. One specific example is Gaillard Island, Alabama, which was created from dredged material and provides nesting habitat for thousands of colonial seabirds. Other examples typical of beneficial use include nourishment of beaches, and protection of historic properties.

The Corps Regulatory Program responsibility includes authority to regulate dredging, structures, and other types of work in navigable waters, the discharge of dredged or fill material into U.S. waters, and the transport of dredged material for the purpose of ocean disposal. Our regulatory actions are subjected to full public interest review, with full involvement of Federal and State resource agencies. We strive, through the permit process, to ensure that the impacts to wetland resources are avoided or minimized, and that unavoidable impacts are adequately mitigated. We are strongly committed to seeking innovative ways to streamline the permit process. Examples include mitigation banks, special area management plans, and other similar approaches. Consistent with navigation safety requirements, we have permitted numerous artificial reefs off the coast of Gulf states where sites have potential for developing or enhancing fisheries resources. One mitigation bank has been established in Louisiana, and several proposals by private interests in that State are being formulated.

The Corps has many research and development activities underway which are applicable to protection of the Gulf environment. For example, we are evaluating the effectiveness of wetland restoration techniques, such as river siphon systems, river splays, unconfined dredged material placement, and marsh management structures. We are engaged in long-term data collection for use in comparing man-made salt marshes to natural marshes. We are placing dredged material in a thin layer adjacent to the GulfPort Harbor Navigation Channel as part of a demonstration project to study the effectiveness of such placement as a management technique for environmental protection. We are monitoring and evaluating salt marsh establishment sites and investigating benthos recovery following dredged material replacement, evaluating the combined influence of shoreline protection and wetland restoration plantings on existing wetlands and wildlife, and financially supporting the National Marine Fisheries Service in a sea turtle tagging and tracking study to assess potential impacts of hopper dredge operations.

We are one of five Federal agencies participating in a task force effort to address the critical loss of coastal wetland resources in Louisiana. We will be the lead agency for six wetland restoration projects which are approved for construction and which will protect nearly 5,000 acres of existing marsh, while creating over 11,000 acres of new marsh.

Under the National Estuary Program, the Corps has a partnership role in the five designated sites in the Gulf area. Our districts have been active participants in the management and technical committee activities associated with these sites.

The Corps is an active participant in the Federal/ State Gulf of Mexico Program, under the lead of the U.S. EPA. The objective of this program is to help sustain the economic development of the Gulf region while protecting environmental quality. Our coastal districts and divisions are providing support and leadership in formulating policy, managing program activities, and making available to the Gulf of Mexico Program office the technical expertise and staff support needed to maintain an effective and successful program.

Another important effort in which the Corps is involved is the Coastal America Initiative, established in 1991 to address the primary coastal environmental concerns of habitat loss and degradation, non-point source pollution, and contaminated sediments. Our coastal districts are conducting their planning and project activities with a view to identifying, developing, and implementing coastal projects that meet the criteria for this program. Our agency will have the lead on seven projects, as well as a supporting role in 13 others.

The Corps missions in the Gulf region are essentially the same as our missions in other coastal regions of the United States. As I mentioned earlier, our civil works program for fiscal year 1993 includes $812 million for carrying out our agency mission in the Gulf region. This compares to totals of $614 million for states bordering on the Atlantic Ocean, $543 million for states bordering on the Pacific Ocean, and $688 million for states bordering on the Great Lakes.

In summary, the Gulf region has a high priority within the Corps of Engineers. We stand committed to continuing our strong partnership with other Federal agencies, State and local governments, and the citizens of the region— to conduct our traditional missions of navigation and flood control as well as actively participate in Gulf-wide programs that contribute to the protection of the Gulf environment.

Mr. Chairman, that concludes my statement.

[The prepared statement of Mr. Hanchey can be found at the end of the hearing.]

Mr. ORTIZ. Thank you.

Mr. Fjetland.

STATEMENT OF CONRAD FJETLAND, ASSISTANT REGIONAL DIRECTOR FOR FISHERIES AND FEDEREAL AID, SOUTHWEST REGION, U.S. FISH AND WILDLIFE SERVICE

Mr. FJETLAND. Thank you, Mr. Chairman, members of the Committee. It is certainly a pleasure to be here and represent the U.S. Fish and Wildlife Service and talk with you a little bit about the programs that we have in the Gulf region. I have a written statement. I would like to skip over much of that—it is there for the record—and address the specific questions in the highlighted form that you asked in your letter. That was what is our agency's commitment to the Gulf, and what is, in general, the Fish and Wildlife Service's role, in terms of programs and activities that we currently have ongoing in the Gulf?

First of all, regarding commitment, what I would like to go back to is something that John Cannon mentioned, which is the partnership for actions document that was signed last fall. While it certainly was not a contest or anything, I am proud to say that the U.S. Fish and Wildlife Service was the first agency to sign that document.

I went into Washington prior to Thanksgiving and presented it to the Director, and he signed it without hesitation. He said, this is a good document. Let's not get hung up on any details in it. The commitment is right. The principles that are stated in that document are right, and the Fish and Wildlife Service whole-heartedly supported and signed onto that document right upfront.

We certainly have other evidence to a commitment in the Gulf in regard to the many different program activities that the Fish and Wildlife Service has in the Gulf region. We manage 44 national wildlife refuges in the Gulf states, and encompass over a million acres that is under direct responsibility of the Fish and Wildlife

Service in the Gulf region. I might add to that, within the State of Texas, alone, we have over 300,000 acres of national wildlife refuges in the coastal area.

We have a significant research commitment in the Gulf, through our National Wetlands Laboratory that is in Louisiana, which also has a field station right here on the campus of Corpus Christi State University. We also have our Contaminants Research Laboratory that has a field station here at Corpus Christi State University that works on issues such as migratory birds, wetlands ecology, and similar issues in the Gulf region.

Our Federal aid program is very active in the Gulf, through our Sport Fish Restoration Funds, our Wildlife Restoration Funds, and our Coastal Grants Program, all of which we administer. The National Estuary Program was mentioned earlier. The Fish and Wildlife Service has a Bays and Estuaries Program, where we provide support for that. We currently have a funded program in Galveston Bay. In fiscal 1994, we are scheduled to start additional programs in Louisiana and here in Corpus Christi Bay to go along with the new National Estuary Program that is starting up this year under EPA's program.

There is no doubt that the Service recognizes the strong need for inter-agency cooperation and coordination to address Gulf issues. I have just completed a one-year assignment as Intergovernmental Coastal Coordinator dealing with these kinds of issues working out of Austin. I have recently returned back to my official duty station in Albuquerque. I can tell you that this is exactly the type of thing that is needed in the Gulf—is to get all of the different players together, get them to sit down, get them to work together.

I find it interesting that I also have Coastal America mentioned in my remarks, and this is the third time you have heard it already at this table. I think it is because it is a good example of what you can do when you get people together and you say go solve a problem, and we are not going to send a lot of baggage with you to solve it, just go do it. That is what we did. I think Coastal America has been a good program, and I think we can accomplish the same kinds of things in a lot of other areas.

It seems to me that we have three things that we need to do in the Gulf, and this is not in my written statement, it is just something I stuck in here that has come to me as I listen.

We need coordination and commitment from all of the agencies. We need people to get together, and we need to have them set aside past history and look forward to solving problems in the future. It does not matter what happened in the past or who is responsible, or what led up to things. What we have to do is decide that we are going to set about solving the problems.

We need good people to do this. I think that is very important. I think that is what made Coastal America work in the Gulf region. We had good people that were committed to doing it. They sat down—I like to say they took off their bowling shirts. They forgot what their primary history was, what the folks in Washington might say if they made the wrong statement or stuff, and they sat down and they did the job, and they got it done, and approached it in a cooperative team effort. We need that commitment, we need leadership. It is not my place here to say whether it is right that we have legislation on the Gulf, whether we have executive orders or something. The key thing is that we need to have clear direction and guidance on how to proceed forward.

I think the Fish and Wildlife Service has a lot of activities. We have field stations throughout the Gulf. Our Ecological Services Field Station, again, here at Corpus Christi State University is one of several throughout the Gulf that can address these issues on an on-the-ground basis.

I guess maybe I have set you up a little bit, Congressman, to ask me about the Center for Environmental Studies and Services, so I might as well go ahead and leap into that.

The Fish and Wildlife Service has four different field stations that are located at this University that the University has provided us rent-free space for over 10 years at a significant savings to the Government, and not even considering when you talk about that, the synergistic activities that we have by co-locating with the University, with the other State and Federal agencies that are here on the campus. It is a good program, and I hope we can figure out some way that we can see it continue as the University expands.

Well that I guess summarizes what I had here, Mr. Chairman. Let me move on. The bell has rung. I will be happy to answer questions when the time comes.

[The prepared statement of Mr. Fjetland can be found at the end of the hearing.]

Mr. Ortiz. Mr. Pearcy.

STATEMENT OF J. ROGERS PEARCY, REGIONAL DIRECTOR, GULF OF MEXICO REGION, MINERALS MANAGEMENT SERVICE, DEPARTMENT OF INTERIOR

Mr. Pearcy. Thank you very much, Mr. Chairman. The Minerals Management Service is pleased for the opportunity to testify here today and discuss with you our roles and responsibilities in the Gulf of Mexico.

The Minerals Management Service is responsible for leasing Federal lands——

Mr. Ortiz. If you can just get close to the mike. This is being recorded. So, the closer you get the better, Mr. Pearcy.

Mr. Pearcy. Thank you.

The Minerals Management Service is responsible for leasing Federal lands and also in regulating the exploration, development, and production activities on those lands. The OCS Program came into existence in 1953 when the OCS Lands Act was passed, and has made a major contribution to this nation since that time.

Since 1953, over nine billion barrels of oil has been produced from OCS areas, and over a hundred trillion cubic feet of natural gas. The program has placed into the Federal Treasury over $100 billion. Eighty-two billion dollars of that has gone into the General Fund, some $13 billion has gone into the Land and Water Conservation Fund, $2 billion in the Historic Preservation Fund, and about $3 billion has gone directly to the coastal states adjacent to these activities.

Just to give you a little comparison of the breadth of the activity in the Gulf of Mexico, compared to the other OCS areas, the daily production in the Gulf oil production is over 700,000 barrels of oil per day, which is about 85 percent of the total OCS production, and about 10 or 12 percent of the total U.S. production. We also produce, on average, over 13 billion cubic feet of gas production from these OCS lands in the Gulf, which is 99 percent of the total OCS gas production and about 30 percent of the gas production of the nation.

We have 3,800 fixed platforms in the Gulf—1,600 of which are major platforms. This compares with 26 platforms in the Pacific, and none in the Atlantic or the Alaskan region. We have 144 rigs running today in the OCS area in the Gulf of Mexico. We have zero in the other regions. We have deep water production and development taking place. These platforms take a tremendous amount of capital to erect. Shell has one in 3,200 feet of water. It is going to cost about $1.5 billion. Shell has contracts throughout about 46 states. Much of the fabrication of those platforms has taken place in the Corpus Christi area.

To support this leasing and regulatory program, the Minerals Management Service has a very strong environmental studies program. We have expended some $12 million in studies in the Gulf of Mexico since its inception in 1973. In the last few years, more and more emphasis has been placed on studies in the Gulf of Mexico. For example, this fiscal year, some $9 million, out of a $19 million budget is going to be devoted solely to the Gulf of Mexico area.

To briefly give you an example of some of the studies we have going on in the Gulf, we have one of the largest physical oceanographic studies now underway that has ever been undertaken in the Gulf of Mexico. It is going to take over five years to complete, and it is probably going to cost somewhere between $20 to $25 million. That is going to give us some valuable information on the circulation patterns in the Gulf, the transport mechanisms that are in place.

Also, it has some other spin-offs from that—and that is we are studying the eddy currents in the deeper water that—will have some benefit to the industry in designing platforms and rigs. We have a Gulf of Mexico monitoring program that is under contract to Texas A&M, and that is to study the impact of oil and gas activity around permanent structures, long-term impacts.

We are studying deep-water chemosynthetic communities that we found out in the deeper water. We require the operators to avoid these when they are placing their semi-submergible rigs and their platforms there. We have an ongoing study on endangered species, such as turtles since when platforms are removed, there is some concern that they could be harmed by the means that are used to remove platforms.

We have a study going on with reef fish. Oil burning research is a big part of our program, where we are, in cooperation with the Environmental Department of Canada, studying the burning of oil on ocean waters. We also have a program going with them on identification and thickness of oil by remote sensing. We have a number of other experiments going on, and we operate an oil and hazardous material simulation environmental test tank (OTTMSETT) in Sandy Hook, New Jersey that we took over. We have a number of other coordinating and cooperating projects going on with various universities in Louisiana and Texas.

Mr. Chairman, that concludes my remarks. I would be glad to answer any questions.

[The prepared statement of Mr. Pearcy can be found at the end of the hearing.]

Mr. **Ortiz**. Thank you, Mr. Pearcy.

Now, we are very fortunate in having with us our Land Commissioner, Mr. Mauro, who has recently been named to head the Federal Fleet Conversion Task Force. Welcome to this hearing today, Mr. Mauro. You may proceed.

STATEMENT OF GARRY MAURO, LAND COMMISSIONER, TEXAS GENERAL LAND OFFICE

Mr. **Mauro**. Thank you, Mr. Chairman. Of course, I have written testimony, detailed testimony, and will just try to hit the high points. As a graduate of Texas A&M, I am glad to be at Texas A&M at Corpus Christi. It makes me feel right at home. It makes me feel good to be here.

Also, as you probably know, later today, from reading the paper, we are opening the first bioremediation testing facility, in cooperation with this university. We are going to make Corpus Christi University and Corpus Christi the leaders in the world for bioremediation technologies. We can clean up the oil and hazardous waste created by our industrialization through naturally-occurring microbes, and I am looking forward—the leadership role that this community and you, particularly, Mr. Chairman, have played.

You know, as Land Commissioner, I manage four million acres of submerged land. Ten years ago when I took office, I have to tell you I was shocked when I discovered I also manage one of the largest garbage dumps in the world. Because the fact is, with the marine debris problem, with the institutional dumping by ships of garbage in the Gulf of Mexico, I, in essence, was managing a major garbage dump. That led me to become involved, in a pretty big way, and our office involved, in a pretty big way, working with Federal agencies, State agencies, and even international agencies to attempt to deal with the problems of the Gulf.

In short, Mr. Chairman, I am responsible for the Coastal Management Program, I am responsible for the Marine Debris Program which, by the way, we have two annual beach cleanups, the Great Texas Beach Trash-Off occurs tomorrow at 9:00 o'clock. I know that you Texas Congressmen will be joining me with 10,000 other Texans tomorrow at 9:00 o'clock in the morning to clean up our beaches. I am looking forward to not only hard work, but good photo-ops for all three of you.

Seriously, after a decade of dealing in these areas, the one thing that has become absolutely clear, and I think was reflected in everybody's testimony, the Gulf is an economic and environmental treasure, and it is under siege. Without cooperation from all levels of Government and all parts of Government, we cannot deal with the problems we have.

I add one more thing. Without involving Mexico and the other nations of the wider Caribbean, it does not matter much what we do at our end of the Caribbean. The fact is we have all got to create an atmosphere of cooperation on the United States' side of the border, because the truth of the matter is the Gulf of Mexico is a border. Borders do not respect winds and tides. The Gulf of Mexico is a border.

The sooner we recognize that we have to treat it as a border, the sooner we recognize that without the specific structures in place to have us deal with both Mexico's problems, the other wider Caribbean problems, our dealing with our problems just is not going to solve the overall economic and environmental problems we have with the Gulf of Mexico.

Mr. Chairman, I support all of your commitment. I have worked with each of you—you Texas Congressmen anyway—I welcome you here too, Congressman—on this problem in Washington. I just say, when we start down the road toward legislation this year, that the legislation not only direct all state, local and Federal agencies to work together, but they also include Mexico and the wider Caribbean countries.

I once again invite you to join me tomorrow at the beach cleanup. Once again, thank you for letting me play a role in this hearing today. I believe that, with leadership like yourselves, we will save America's Sea. We will make the Gulf of Mexico a treasure for future generations of Texans.

[The prepared statement of Mr. Mauro can be found at the end of the hearing.]

Mr. Ortiz. Thank you very much for your testimony. Some of those guys are going to have to come back from New Orleans to be there at 9:00 tomorrow morning.

You know, we have rules in Washington that most of the time it is the most senior members who have an opportunity to ask the first questions, or the one who came in first. It was kind enough of Mr. Fields, who not only is the Senior Ranking Member of the Full Committee, but he was here first; that he is going to yield to our good friend, Mr. Green, because he has to catch a flight, and he will be the first one to be asking some questions of this panel.

Mr. Green.

Mr. Green. Thank you, Mr. Chairman. I thank Congressman Field for the courtesy. I have a question of our Land Commissioner, Garry Mauro. I mentioned earlier about the trash cleanup, and I have been involved over the years, particularly in Galveston—although, for those of you who haven't noticed, most of us will not be going for photo-ops on High Island because of the—there is a nudist group who is going to pick up trash on High Island. We have diversity in Texas.

Mr. Ortiz. Be careful now. We might have some volunteers from here going down there.

Mr. Green. Most of the elected officials will not be on High Island looking for photo opportunities.

Having served a lot of years as a legislature now in Congress and recognizing your leadership—and the Gulf of Mexico, as you said, is not just—you know, it is not Texas' responsibility or Louisiana, or Mississippi, or Florida, it is an international responsibility. Are states sufficiently involved with Federal interests in working on solutions for Gulf problems? What is the biggest problem you see in having dealt with it for 10 years at least that we can do as Members of Congress, not just from Texas, but also New York, to make sure we an address the Gulf of Mexico?

Mr. MAURO. Congressman, just giving you the bare facts—I am trying to play-off the nudists. Seriously, I am convinced that the EPA's Gulf of Mexico Program has taken us light years toward getting local, State and Federal cooperation. I do not think you can do anything but congratulate the participation level of all of the states and all of the Federal agencies in that program. I believe, personally, the timing is perfect. It is now time to broaden that structure to include Mexico and the other wider Caribbean countries.

We have done—or we are in the process of putting in place programs that will do what needs to be done on our side—on our part of the border. It is time to bring the other players to the table. I would urge that that be focused. Yes, congratulate and properly fund those agencies that are dealing with the Gulf's problems, but now it is time to move forward.

As you know, Senator Bentson and Senator Graham, and a lot of Congressmen—I think Greg Laughlin was kind of the lead the last time—had a bill that would have done some of that. It did not manage to make it last time. I know those bills are being reintroduced by Congressman de la Garza and Congressman Laughlin, and Senator Krueger, and whomever else—that we finally, as this political season develops, jump into the fray. I would hope that this is a bipartisan issue and that we move forward to bring the other players to the table.

Mr. GREEN. Thank you. Thank you, Mr. Chairman. That was the only question I had.

Mr. ORTIZ. Mr. Fields.

Mr. FIELDS. Mr. Mauro, first of all, let me congratulate you on your recent appointment. I look forward to working with you on the alternative fuel vehicle effort that you have been selected to lead.

I want to ask you a question about bioremediation. Like you, I think that it has great promise, but it appears in the past that the Federal Government has not been perhaps as quick as it should in advancing this particular technology. What would you do? What do you think the Federal Government should do?

Mr. MAURO. Well, Congressman, as you know, you and I have worked together on energy issues, bioremediation issues, alternative fuel issues, Gulf issues for most of the last 10 or 15 years. We share a common goal, and that is to move the ball forward for the country and Texas.

To go very specifically to your question on bioremediation. In the mid-'70's for budget reasons or whatever, the Federal Government, the EPA, the research and development people got out of the bioremediation business. It is kind of interesting. EPA has moth-balled the facility, very similar to what we are building here on Long Island. It has been moth-balled since the late '70's. The idea that we are having to build it is—we are going back and learning from our mistakes and starting forward again.

What we need is for people to recognize that you are going to have to have whole menu items to deal with hazardous waste and oil spills, but particularly bioremediation—the use of naturally-occurring microbes is the cleanest, cheapest way to clean up pollution. What we need is the Federal Government to get back into the business of promoting bioremediation, and start recognizing bioremediation as a tool for the cleanup. It is not a panacea. It is not going to solve all of the problems, but it is a tool. It should be a major player on front and center stage in cleaning up pollution problems. For whatever reason, in the mid-'70's, we backed-off even allowing bioremediation to play a role.

Candidly, if you can imagine, in 1993—24 months ago, there was little or no Federal participation in bioremediation in the country. That has changed significantly in the last 24 months; but we are just in the embryonic stages today.

Mr. FIELDS. I think, as a state, we are in a perfect position to push that particular technology. As I am the Ranking Republican, Solomon is a subcommittee chairman, and Congressman Laughlin and Congressman Green are members, we have worked very closely with the Coast Guard. As an example, we were the first area to get the pre-positioning of the cleanup equipment in Houston. As I understand that equipment is going to be prepositioned here in Corpus within weeks. So, that is a good development.

I think that we need the partnership to push this internally within the Coast Guard. I wish they were represented today on the panel so we could address this.

Mr. CANNON. Congressman——

Mr. FIELDS. I think we have got a very sympathetic Commandant, and I think we have some people who would want to work with us.

Mr. MAURO. Well, Jack, one of the things I would suggest is that we could even—we need multi-dimensional planning for oil spills and cleanups. For whatever reason, it is a lot easier to talk about mechanical means. What we need to do is require people to look into bioremediation. In the oil spills we have had in Texas and, as you know, Congressman, because I know you came down and helped us deal with the big oil spills in Galveston, and you too, Congressman Green, as a State Senator, you have dealt with that issue.

The fact is if we had not been at the table pushing the Federal agencies to use bioremediation, it would have never been mentioned. It would have never been discussed. If you all can provide some push in Washington, it would be of great benefit to us.

Mr. FIELDS. I will be glad to work with you on that. I know that you would be glad to work with all of us.

Let me ask you one other broad question. I would be glad for anyone to respond to this. Before you came in, Commissioner, I was complimenting Congressman Ortiz, and saying how important it is for our State that he has assumed Chairmanship of this Subcommittee to give the Gulf of Mexico some visibility. I pointed out that, as far as I know, this is the first time that there has been a Congressional hearing in Texas on the Gulf of Mexico, and it is due to Congressman Ortiz's leadership.

If you look at funding figures as an example, and I have got the EPA regional program comparison for fiscal year 1993, in terms of funding, there is $34 million for the Great Lakes, there is $24 million for the Chesapeake Bay region, and the Gulf of Mexico has $4.9 million. I mean, it does not seem that we have the emphasis that some of these other bodies of water have. A hundred and 78 EPA employees Great Lakes, 61 Chesapeake Bay, 12 for the Gulf of Mexico.

Mr. MAURO. Congressman, I will jump in. Seriously, for whatever reason, we have ignored what is America's Sea. I think, by your subcommittee's leadership here today we are reversing that. I am pleased, as a Texan and an American that we are going to finally start paying the attention to the Gulf that we possibly can—we need to.

I know that these are tough budgetary times, so we cannot undo all of the problems that have been created by being ignored, but, if we can start putting some money here, we have the apparatus, and we have the people—the Fish and Wildlife people—we have good people in place. We will give them a little running room, a little program money. We can have us a good program in a very short time, because you have very good people at this table. The organizations they represent are truly committed to making the Gulf of Mexico viable in the future.

Mr. ORTIZ. Yes.

Mr. CANNON. Congressman, let me address that, if I can. My figures are a little different from yours. Clearly there is more funding available for staffing those programs in the Great Lakes and in the Chesapeake than there is for the Gulf of Mexico Program. Those programs have been going on longer, and have more of an infrastructure than we do. We have started out more recently, and have been seeking to establish ourselves. We have made great strides within that time I think. This document that we have all talked about I think puts that in place and creates a framework. Clearly, there is more that we can do. There is always the question of resources in Government, and there is always something more you can do with the extra dollar.

So, I will just leave that with the Committee and say how much we appreciate the Committee's recognition and support of the importance of this resource and the programs that relate to it.

Mr. FIELDS. Thank you, Mr. Chairman.

Mr. ORTIZ. The gentleman from New York, Mr. Hochbrueckner.

Mr. HOCHBRUECKNER. Thank you, Mr. Chairman.

In my opening remarks, I indicated that, while I am from afar, we obviously do have many common problems that we share. I would like to address myself to Messrs. Cannon, Scavia and Hanchey on this one. I noticed in your testimony each of you specifically cull out your interest and concern about the National Estuary Program. I think many people are not aware that in the entire nation only 21 bodies of water have been selected for this unique protection status. In practical terms, obviously it is the quickest way to get the Federal money to clean up these bays. Of course, in recent times, in the last year, you have added Corpus Christi Bay to that program. We have also added Peconic Bay, which is the bay between the north and south forks of Long Island, which I happen to represent. It is obvious that here we share a common area.

Now, we were fortunate in the negotiations to increase the National Estuary Program to $21 million. My concern, as I say, that we share is that, in my case, in Peconic Bay, we have had a brown algae tide that has wiped out our scallop crop, essentially taking us from about $10 million worth of shellfish 10 years ago, to about $10,000 for the shellfishing today. I would assume you have similar problems.

Also, you mention in your testimony that you have areas in the bay where you have no oxygen. So, it is a hypoxia kind of situation. We have the same kind of problem on Long Island Sound. We found that to be related to the nutrients associated with 44 major sewage treatment plants that service New York City.

So, my question for the three of you is how do you feel the Corpus Christi Bay National Estuary Program is going? What do you attribute some of these problems that you are experiencing, which has resulted in Corpus Christi being singled out with the other 20 bodies of waters for this special treatment in terms of what are some of the problems that you are seeing with Corpus Christi Bay? Maybe we can learn from what you are learning about your problems and apply them, in my case, to Long Island. Any or all three of you.

Mr. CANNON. Congressman, I cannot speak specifically to Corpus Christi, because I think the NEP is just getting started. I do not know that they have had a chance to identify the problems or come up with a characterization. We have had some experience with the brown tide in estuaries in Texas and, in fact, the Gulf of Mexico Program sponsored an emergency workshop of experts in the summer of 1991 to try to identify the effects of that.

There are still significant questions about the cause of it, its relationship to human activity and how we can prevent it in the future. I do not know to what extent the work that is being done on that in this area could be helpful to you, but we would certainly be happy to explore that if we an.

I guess the second point of concern was the low dissolved oxygen, which does occur in developed estuaries around the country. It has been known to occur in estuaries in the Gulf of Mexico. There is a large area off of the coast of Louisiana in the Gulf, where that situation is known to occur. It has been related to excess nutrients being deposited into the waters that are flowing into the Gulf, or into the estuaries along the coast. We have undertaken a number of efforts to try to deal with those. One of them most recently was a joint effort with the National Oceanic and Atmospheric Administration to identify means by which non-point source run-off from agriculture and silver cultural activities could be limited, so that the amount of nutrients going into the water can be reduced so that the oxygen demand can be reduced, and so that the species will have enough oxygen in the water to be able to breath and to live. That is an effort that may have applicability to your situation as well.

Mr. SCAVIA. In addition to NOAA's role in implementing non-point source control measures that Mr. Connors discussed, NOAA's role within the National Estuary Program is also one of scientific advisor. We promote scientific experts from the NEP committees to advise those developing management plans. One thing that I think needs more attention—I think you brought it up exactly—is recognizing that the suite of National Estuary Programs actually represent a collected set of issues. If we can look at those NEP's as a collected set, compare and learn from them, we can apply what we have learned to other estuaries and other problems.

Many of the bays and estuaries have algal bloom and low oxygen problems. I think what we need to do, and what we are trying to do, is take a more systematic look at those 29 estuaries and other estuaries that are being studied, and learn from the collected set, so we can apply that technology to improve management in other areas that do not get specific attention.

Mr. HANCHEY. Just as Mr. Cannon indicated, the Corpus Christi National Estuary Program is in the early stages, and consequently I am not able to comment on how that is going. Let me talk a little bit more generally about the Corps of Engineers' role in the National Estuary Program and some of the opportunities that I think our involvement present.

The Corps is, as you know, involved in a lot of different projects throughout the Gulf region, including most of the areas where there are national estuary programs. In the case of Corpus Christi, for example, we have navigation projects here. In the Barataria/Terrebonne Basin in Louisiana, we have both navigation and flood control projects and a number of other activities, so that the Corps of Engineers is involved in part because of the potential impact of some dredging activities associated with our navigation projects, and, in some cases, the impact of flood control projects on natural flows.

In addition, the Corps is responsible for the regulatory program. We manage that program, so we have the opportunity, through these national estuary programs which attempt to produce a comprehensive assessment of the problems and the solutions to those problems, to use the regulatory program in concert with the management plans that are developed by EPA and the other Federal agencies. Our regulatory program is one tool available to address estuarine problems.

We also, through creative use of dredging, are able to actually turn what has been perceived as a problem in many cases, into at least part of the solution to creating wetlands and restoring wetlands and marsh areas. We have, in fact, done that in a number of cases. We also bring to the table, just as somebody explained, scientific and engineering expertise. We bring design and construction management expertise to those situations where part of the solutions involve construction work.

I think that the National Estuary Program serves as a model in the Gulf region where it is working in concert with the larger umbrella program, the Gulf of Mexico Program. I think we are poised and ready to really make an impact on the Gulf. I think, as Commissioner Mauro indicated, we have made a good start. It is now a matter of resources and continued emphasis. We are, of course, hopeful that some of these will be forthcoming.

Mr. HOCHBRUECKNER. Mr. Chairman, may I continue?

Mr. ORTIZ. Go ahead. Yes.

Mr. HOCHBRUECKNER. Well, certainly we are pleased to see that five of the 21 bodies of water in the National Estuary Program are in the Gulf of Mexico. Let me assure everyone assembled that I will continue to work very closely with the Chairman, in terms of what we can do to help Corpus Christi Bay, as well as Peconic Bay, in restoring them to a more pristine form.

Mr. Fjetland, and Mr. Pearcy, in your area, I have a question. Mr. Fjetland, in your testimony, you indicate on page two that, in addition, about 90 percent of U.S. and Mexican oil produced offshore is from oil wells in the Gulf of Mexico. Sixty-three percent of all crude oil imported into the United States comes through Gulf water. Six of the nation's top 10 crude oil handling ports are in Texas and Louisiana. Now, as a member of the Coast Guard Subcommittee also, we are very concerned about oil spills. Obviously, you folks are too.

It seems to me, in our views of the concerns—it sort of breaks down—coming from a engineering background, I tend to break things down into chunks. The concerns we have are, first, to prevent ships from hitting reefs and spilling oil. Secondly, there is a major concern in terms of oil loss and pollution when we transfer the oil from ships to the first valve on shore. Then the third area has been, and one that has been neglected for quite a while—the area from the first valve to the storage tank. It seems to me that what we have done in recent years is to turn over the authority for the inspection from the first valve to the storage tank—we have turned that over to the Coast Guard because it was sort of a no-man's land. I mean, it wasn't clear whether the Coast Guard or EPA was responsible. Now, the Coast Guard is responsible.

So, I guess my question for the two of you is, based on your local history and experience here, how are you doing with oil spills, and do you think the Coast Guard, for example, is doing an adequate job in their new inspection goal, in terms of minimizing the spilling of oil.

Mr. FJETLAND. From the Fish and Wildlife Service's standpoint, of course, the primary emphasis ought to be on preventing spills in the first place. That is certainly where we would place our highest priorities—in prevention. It is kind of interesting that you asked this question today. I do not know if anybody else saw it last night; but there happened to be a movie on TV last night about the *Exxon Valdez* accident. It was somewhat dramatized I think. What it pointed out in that movie was confusion and lack of coordination and who is on first, exactly the same question that you asked in terms of addressing it.

I think that there is a point there—that you have to have good contingency plans. People do not like to do planning; but the planning upfront is really what needs to be done, and have the equipment available so that you can address the problems.

Now, I am not personally involved in contingency planning or other things on the Gulf here. I can say that I have not heard any particular complaints from our field people that we are not being involved—that things are not being adequately prepared for. If you have a spill, we have got a problem. Hopefully, we can contain them and keep them in a relatively—keep the impacts as minimum as possible.

Mr. PEARCY. Congressman, the Minerals Management Service, of course, is very interested in spill response, spill clean up and prevention. We have, like I said, over 3,800 producing platforms offshore. Surprisingly though, very little oil is spilled from production facilities. In fact, we have never had an oil spill from a blow-out from an exploratory rig in the history of the Gulf of Mexico. We have had some pipeline spills, and we have had a few spills from production facilities.

There is a Clean Gulf Associates Consortium that most operators use as a base for their contingency planning. That is, they have the equipment, and there are also a group of trained personnel for that equipment. So, we have a fast response time. We also have four rig boats out there that work out in the field that never come ashore, with fast response units on them so that they can respond very quickly too a spill.

The Oil Pollution Act of 1990 extended our responsibility into state waters for oil spill prevention and contingency planning. So, we are working very closely with the coastal states that have production in those waters, trying to coordinate contingency plans from all of those facilities, and make sure that every facility has a contingency plan in place.

We also conduct unannounced oil spill drills, where we dream up a spill scenario and we require the operator to put their contingency plan into operation—for example, a thousand-barrel spill from a platform—and see just how well those contingency plans work and if everything is coordinated properly. We go up to the point of putting the equipment in the water. They will find the boat to put the equipment on. They will assemble the people that are going to man the equipment, and we do everything but take the equipment out to the platform. So, it has worked very well. We have been very pleased with our contingency planning.

Mr. HOCHBRUECKNER. Mr. Fjetland, to respond to your question. I missed the movie, but I lived the experience.

Mr. MAURO. Congressman, if I might respond? I run the Texas plan—oil spill plan. It is my job to—well, last year, we responded to 800 oil spills, the year before that about 700. I also managed 200 producing oil and gas wells in the Gulf. We can all tell you that we did very well in responding to those 1,500 spills; but, the truth of the matter is we are not ready to deal with a catastrophic spill in the Gulf of Mexico.

We can brag about how we never had a blow-out in an exploratory well in U.S. waters, but we still have the Ixtoc shadow—the third largest oil spill in the history of the world occurred in the Gulf of Mexico, and it took us almost a year to get it capped. We are still dealing with the effects of that spill in some ways. If you go on any beach in Texas you will find lots of tar. Most people will tell you at least a significant percentage of that comes from the Ixtoc spill.

It is my belief, after dealing with it day-in and day-out—I was really proud when we passed that law here in Texas. It is considered a model by a lot of people—but, the next day after we signed it into law, the phone rang and we had our first spill. In fact, the first day we had three spills. So, I unfortunately know more about it than I ever dreamed I would want to know about it. I can tell you, as you do, lopping it into different sections, the biggest problem is because OPA 90 does not require significant equipment in place till '95, we do not have the equipment in place for a catastrophic spill. We won't until the Federal law kicks in.

We have a lot of requirements for state law; but until the OPA 95 requirements, or 94 requirements on major equipment are in place, we are not going to get as much response to a catastrophic spill.

In terms of the small spills, the medium-sized spills, we are doing a pretty good job. The contingency plans are now in place; but the fact is, as he will tell you, since they do unannounced drills, a lot of times those plans are paper plans.

As a matter of fact, you can go to an oil spill technology conference, and I will guarantee you, there will be at least a couple of consultants there with their little displays, and they will sell you a plan for two or $300, or they will sell you a kit to build a plan for two or $300, where it is fill in the blank.

So, at the one level, I would like to brag, because we are doing fairly well, at another level, I do not want anybody to think that we are ready to deal with catastrophic spills, and that every receiving facility in this country, and in Texas in particular, because that is what I know about, is ready to deal with spills, the one you are talking about, because we are not.

The Coast Guard, under-manned as it is, is doing a significant job. I could not say anything but positive things about the Coast Guard, to go specifically to your question.

There is one other area that I think we all ought to be aware of that is a serious problem, with 63 percent of the oil imported into America coming in through the Gulf, it is about 50 percent that comes into Texas. There are a lot of big tankers loitering offshore now outside the Coast Guard area. I submit to you that I do not think any of us would be very comfortable looking at those particular loitering operations or looking at the plans and place to deal with a major spill.

If you remember, the MEGA BORG occurred in that same area. I just do not believe we ought to sleep real well at night, if you are thinking in terms of a big catastrophe. Having said that, I do not think any of us should be anything but pleased and proud with what OPA 90 did and our local plans did, because we are light years ahead of where we were. I like to say we are better off today than we were yesterday, but we are still not where we want to be.

Mr. HOCHBRUECKNER. Let me just respond by saying you will be happy to hear that we are working on legislation that would, in essence transfer from the airborne aerospace community to ships basically to hold position satellite based navigation systems, coupled with automatic pilot systems, in order to ensure that we do not have ships hitting reefs and spilling oil.

Also, of course, we are working, in terms of improving OPA to require on-ship systems, in terms of booms, as well as systems to draw out the water and oil that has been spilled should occur, and separating them and in fact storing the oil for later salvage in large bladders. So, that is an area.

Mr. Mauro, on your particular area, let me say that I was quite interested in what I saw in the paper today—your comments about biotechnology. Let me tell you that is an area that will be one of the growth job-producing areas in the future. So, as you look in this year's Federal budget and request to the President, we have three major pots of money. About six billion has been requested by the Department of Energy for environmental cleanup and restoration; 5.1 billion in Department of Defense for environmental restoration; and there will be about $2 billion from the Superfund. So, this year alone is about $14 billion associated with environmental restoration.

We project, over the next 10 years, about $200 billion, which is real money. So, it seems to me you have picked a winner here. This is certainly an area where—and it is not just a case where we are going to spend the money digging up earth that has been contaminated with oil or gas or what have you on that basis or wherever, which was the classic approach—dig it up and move it to a less-sensitive area. Our intention, certainly of the Chairman and myself, being on the House Armed Services, we will be devoting a substantial amount of money to technologies that will allow us to create those bugs that will clean that earth and let us put it right back in the hole it came out of. So, there will be a lot of R&D associated with restoration as we develop this biotechnology opportunities.

We will, in fact, use it to clean up our own environment, as well as sell to the world. One of our major goals is dual-use technologies; using defense money to develop technologies that can have a commercial spin-off, so that we can be more commercially competitive in the world.

It sounds to me like you have picked a winner. I look forward to working with your people here at this university, as we need those technologies too up in New York.

Mr. Fjetland. Congressman, if I can make one more comment regarding your question? We really talked about two different areas on oil spills. One is the catastrophic spill. We need to have good contingency plans to do the things you talked about; but we cannot forget the hundreds and thousands of little spills that are occurring all of the time. That is the emphasis that I say. We have got to do a better job of preventing those from happening in the first place. Better inspection, better quality control, better checks on abandoned pipelines, make people accountable for those things that they have left in the Gulf. There are thousands of miles of pipeline laying on the bottom of the Gulf right now.

We have to do a better job of stopping the little spills, as well as preparing for the catastrophic one.

Mr. Hochbrueckner. Thank you, Mr. Chairman.

Mr. Ortiz. Thank you.

Dr. Scavia, I have a question for you. Now, this is my understanding—that NOAA has done extensive research off the coast of North Carolina to locate endangered turtle populations. As a result, your agency has allowed shrimpers off the coast to trawl without nets in some areas in that state. Has NOAA been performing similar research in the Gulf which would allow NMFS to release their TEDS regulations in some areas? How can we tap into similar research beneficial to our fisheries industry? Maybe you can elaborate on that—if my understanding is correct from what I have heard.

Mr. Scavia. Let me explain what we did in North Carolina first, and then answer your question about whether or not there would be an opportunity for similar work in the Gulf. The first thing we did in North Carolina was provide real-time sea surface temperature data from satellites to the region, so that they could observe, on a large scale, what the surface temperature patterns looked like. We also supported studies by scientists of the relative movements of sea turtles with respect to the temperature of the water, so they could evaluate their correlation.

Then, in this past year, a serious management situation arose where there was a need to set or reset the location where TED's had to be pulled. We used the satellite images and the understanding of the relationship between temperature and turtle distribution to evaluate where there would likely be turtles in order to advise these managers that were responsible for actually changing the location.

It is critical, when thinking about whether or not that sort of thing can be applied in the Gulf, to recognize that the relationship between turtles and temperature may not be the same in the Gulf. It also may be true that variability in temperature in the Gulf may not be the same. So, a strict application of that technology to this problem may not be directly transferable. However, what we used to do, is evaluate those possibilities.

The Coastal Ocean Science Program is designed specifically to look at that kind of exploratory research to try to relate the variability in the natural environment to difficult regulatory problems that NOAA and the Nation have to deal with.

So, in answer to your second question, whether or not we can start that kind of work in the Gulf to explore those things, the answer is yes. We are willing to sit down with the regional scientists and try to design the kinds of studies that would be most appropriate to evaluate if there can be a direct application of the North Carolina site application to the Gulf.

Mr. ORTIZ. One of the reasons I asked this—I am as much for protecting the endangered species as anybody. The thing is that we do have information that, in the years past, studies have been made, long hours of observation have been conducted in the Gulf of Mexico and, if I understand correctly, not many turtles have been caught; but I appreciate the fact that you are looking into it, studying this. I hope soon you can conduct your study, so we can find out whether this can be done in the Gulf of Mexico.

We do have another panel. We are running out of time.

I would like to ask one more question. We can begin with Mr. Fjetland here and, of course, anybody else who would like to respond. One of the reasons we changed the name of the Committee—and it used to be the Great Lakes—my good friend, Dennis Hertel, changed the name because maybe he wanted to emphasize a little bit more the Great Lakes. So, when I became Chairman, I went to the Committee to change the name and just include the Gulf of Mexico. We had a few cat calls, you know, from some of the members; it is not that we are going to ignore the needs of the Great Lakes, but I do feel that, in many areas, we have been very slow in addressing some of the issues in the Gulf.

Do you feel that the Service is adequately funded to address all Gulf of Mexico Program activities? Have you or any others developed a budget for full funding of these activities? Do you have an estimated cost of funding if we were to do that? We could start with you, Mr. Fjetland, and then the others.

Mr. FJETLAND. Thank you, Mr. Chairman. I am glad you asked that as a three-part question, so that I can hopefully go through all three parts here logically. No, we do not have anywhere near enough funding to participate in Gulf of Mexico Program activities. The Service has a lot of ongoing activities. We have no line item in our budget that relates to the Gulf of Mexico Program, nor have we, at this time, anything in our '94 budget request that specifically relates to the Gulf of Mexico program. We do have a very modest request to begin participating in the two Bays and Estuaries programs—that is Barataria in Louisiana, and the Corpus Christi one right here in our '94 request.

We have internally looked at what it would take for the Service to participate at a reasonable level in Gulf of Mexico program activities, including implementation and carrying out the planning that is being done. It is one thing to do the paperwork, but it is a lot more to actually get on the ground and start doing the work that the paperwork says you ought to do. Our estimate right now is that we would require a budget of about $5.4 million annually to do that.

Mr. ORTIZ. Anybody else who would like to address that same question?

Mr. HANCHEY. Mr. Chairman, in the Corps of Engineers, we do in fact have a Special Investigations line item in our annual budget that provides for some of the expenses associated with our participation in the Gulf of Mexico Program. It has been basically adequate to this point, as we have gone through the first several years of the evolution of the Gulf Program. With some of the legislation that is being proposed, which would significantly increase the scope of this program though, our funding requirements are in fact going to go up.

As you probably are aware, most of our district offices, where most of our people are that do real projects, are funded by project funds, as opposed to general appropriations that provide for just paying salaries. With cost sharing being a reality in water projects today, it is inappropriate for some of our people to borrow time, if you would, from funded projects, because we have a local sponsor who is paying a share of that cost.

So, in summary, we have an estimate for what it would cost the Corps to participate actively if new legislation similar to the several bills that have been introduced were passed. It is approximately the same as you heard from the Fish and Wildlife Service, probably up to several million dollars a year. That is basically staff time and does not include the money that would be needed for actually constructing projects.

Yes, Mr. Scavia?

Mr. SCAVIA. In answering the direct question, do we have enough money to do what we need to do in the Gulf of Mexico, I think the answer is clearly no. NOAA has never had enough money to do what it needs to do everywhere, certainly not in the Gulf.

NOAA also has been always in the situation where it has never been adequately funded to do its job in supporting EPA, in general, in the estuary programs specifically, as well as all of the other activities where NOAA provides technical advice. So, the answer is definitely no to that.

I do want to make a point, however, that we did do an analysis of the NOAA budget in comparing the three areas you were interested in. In fact, if you look at NOAA's budget—this is the full NOAA budget now, this includes the National Weather Service as well as the ocean side—that, in fact, in the Gulf of Mexico region, we spent approximately $125 million. In the Great Lakes states, NOAA spent approximately $62 million. NOAA's expenditures on normal state operations in states bordering the Chesapeake Bay is approximately $22 million. So, NOAA in fact, may be leading the charge toward more attention to the Gulf of Mexico.

We also do not have a line item in our budget specifically addressing the Gulf of Mexico, but we do have many programs that participate in supporting the Gulf of Mexico needs. Something on the order we are hearing here would certainly help.

Mr. ORTIZ. Thank you.

Mr. CANNON. I guess I should conclude here. I want to tell you, I have just spent the last three days on the Hill helping to defend the President's '94 budget, so I am certainly not going to raise questions about the appropriateness of that budget for our needs. I mean, the standard answer to questions like this is we could always use more money. We put money into the Gulf of Mexico Program. We are now putting in about $4 million directly to support the program office and to provide money for projects in the Gulf. In addition, there are EPA programs that I described briefly in the opening of my testimony that would involve tens of millions of dollars of additional work in the Gulf area. We have not done a full accounting of those.

My own thought is that the legislation which I know is beginning to be introduced on the Hill, and proceedings that may surround that legislation, would provide everyone with a very good opportunity to take a close look at the kind of effort we want going on down in the Gulf of Mexico, to look at that collectively with the Federal agencies and the states, and Congressmen and Senators on the Hill taking a look at that together and, from that, deriving a clearer sense of what our real needs may be, and how those needs might be allocated among the various stakeholders.

I would encourage that process to go forward.

Mr. ORTIZ. Thank you very much.

I certainly would like to thank the members of the panel. It was very interesting testimony. I assure you that, when we go back, we will disseminate the information that we have been able to glean today with the members of the Subcommittee and the Full Committee. I know that several subcommittee members have questions. We will submit them to you in writing, so that you can respond to them.

Again, thank you for being with us.

We will take a three-minute break at this point, so we can start with the next panel.

[Recess.]

Mr. ORTIZ. If everyone will be seated. We will try to expedite the testimony. We can assure you that your entire testimony will be included for the record. We will review it and we will share it with the other members of the Subcommittee and the Full Committee.

Let me introduce our second panel, which consists of the academic community, industry, and other interested parties. First is Mr. Quenton Dokken, Associate Director of the Center for Coastal Studies, from Corpus Christi State University; Dr. Paul Sammarco is currently the Executive Director for the Louisiana Universities Marine Consortium; Deyaun Boudreaux is the Environmental Director for the Texas Shrimp Association; Ms. Mary Lou Campbell represents the National Coastal Committee of the Sierra Club; Mr. Richard Williams is the President of WIMPOL, Incorporated. He is testifying on behalf of the National Ocean Industries Association. Mr. Vernon Behrhorst is currently the Executive Director of the Gulf Intracoastal Canal Association; Mr. John Carey is the General Manager for the Alabama State Docks Department in Mobile Alabama. Today he is testifying on behalf of the Gulf Ports Association. Last, but not least, is Ms. Sharron Stewart, a Texas Representative for the Gulf of Mexico Citizens Advisory Committee.

I would like, again, to remind the witnesses that we are very happy to have you with us. We are running short on time, and we have the five-minute warning. So, we will proceed with Mr. Dokken.

STATEMENT OF QUENTON R. DOKKEN, ASSOCIATE DIRECTOR, CENTER FOR COASTAL STUDIES, CORPUS CHRISTI STATE UNIVERSITY

Mr. DOKKEN. Thank you, Mr. Chairman and Committee members. It is with great appreciation that I come before you today to address the stewardship of the Gulf of Mexico. Encompassing 600,000 square miles, the Gulf of Mexico is perhaps the most economically productive body of water managed by the United States, producing nearly a hundred billion dollars per year in economic activity.

The Gulf is being threatened by growing population, habitat destruction, over-harvesting and point- to-non-point source pollution, all compounded by inadequate knowledge and understanding of this complex ecosystem. A cornerstone of the strategy to ensure the health and productivity of the Gulf must be effective management and research programs with adequate funding. Yet, a recent report by the National Research Council stated that: "Fiscal support in the United States has not kept up with scientific progress, whereas other countries have increased their capacities to conduct oceanographic research. To respond to these challenges, Federal agencies in the academic oceanography community need to establish productive new partnerships."

There are several Federal programs that can have a significant impact in our efforts to better understand and manage the Gulf that have either not been legislated or are under-funded.

The EPA's Gulf of Mexico Program has yet to be passed into law. This program established a track record for identifying environmental degradation, issues of immediate concern, developing action plans to address these problems, and integrated the general public into hands-on remediation efforts.

NOAA's Sea Grant College Program. Sea Grant College Programs have an exceptional record of contribution to the study of the Gulf of Mexico, and development and transfer of technologies to the private sector, and public education. However, funding has not kept pace with need. The Sea Grant Program, the Marine Biotechnology Program Act of 1993 will contribute to long-term resource management planning and the development of new resource products from the Gulf.

NOAA's National Regional Marine Research Program, passed into law in 1990, and inadequately funded since, the Regional Marine Research Program is intended to serve as an oversight program, viewing the big picture of research activities and needs, providing research coordination through the coalition and dissemination of information. By identifying gaps in our understanding of the basic ecosystem processes and the ecology of the Gulf of Mexico and focusing efforts and resources toward eliminating these deficiencies, a regional marine research program can help to achieve greater productivity and cost-effectiveness in the expenditures of research dollars.

The National Marine Sanctuary Program, a long- term monitoring study of coral ecosystems and the Flower Garden Banks National Marine Sanctuary will serve to expand our understanding of coral reef ecosystems, as well as detect the long-term global change. These efforts should be adequately funded.

The Office of the National Marine Sanctuary Program and the Gulf of Mexico Foundation, a private Title I(c)(3) corporation, have teamed up to solicit funds from the private sector as far as studying and monitoring within these areas.

The National Underwater Research Program. Internationally we are losing our competitive edge in the exploration, study, development and utilization of oceanic resources. The National Underwater Research Program should be passed into law and directed not only to the study of the oceans, but also to the advancement of underwater technology. The National Underwater Research Program station should be established in the Gulf of Mexico.

At Corpus Christi University, we strive to promote partnerships with private industry, other academic institutions, State and Federal resource management agencies to attack the challenges of understanding and utilizing the Gulf of Mexico in a comprehensive, long-term framework, which is essential for the future.

The Center for Coastal studies not only conducts applied and basic marine research, but also develops and supports programs such as the Center for Environmental Studies and Services, the Flower Garden Ocean and Research Project, the Adopt-A-Wetlands Program, and the Gulf of Mexico Foundation.

The Conrad Blucher Institute for Surveying and Science and the general land office have collaborated to install a real-time remote sensing network to monitor tides, meteorology and other marine environmental parameters.

The National Spill Control School was designated by Congress in the Oil Pollution Act of 1990 as a training and research resource to the National Response Team, and has trained thousands of people from the private industry and Government agencies to respond to and manage spills of oil and hazardous materials.

The Center for Water Supply Studies is working to find solutions for meeting one of the greatest environmental challenges facing Texas, the supply and allocation of freshwater.

Mr. Chairman, and Committee members, I and my associates at Corpus Christi State University are prepared to and committed to assisting you in expanding our knowledge and understanding of the complex ecosystems of the Gulf of Mexico and in developing resource management strategies to ensure its longevity and productivity. We urge you to support those programs necessary to achieve these goals.

Thank you.

[The prepared statement of Mr. Dokken can be found at the end of the hearing.]

Mr. ORTIZ. Thank you very much.

Dr. Sammarco.

STATEMENT OF PAUL SAMMARCO, EXECUTIVE DIRECTOR, LOUISIANA UNIVERSITIES MAINE CONSORTIUM

Dr. SAMMARCO. Mr. Chairman and members of the Subcommittee, thank you very much for your invitation to testify here. I consider it an honor. There has been a great deal of research planning going on in the Gulf of Mexico over the last nine months or so, indeed, years. I believe this is an opportune time to discuss research priorities.

I would like to start by talking about the NOAA/Gulf of Mexico Regional Marine Research Board. This was set up to establish priorities concerning water quality and ecosystem health in the Gulf, enhance communication and coordination and research across the Gulf, and support needed research through grants.

The Gulf of Mexico RMRB in particular will be ready to submit its plan in May 1993. The reason that this is possible is due to the extensive scoping activities which have been done by the EPA Gulf of Mexico Program and through positive and cooperative arrangements between the EPA and the NOAA RMRB.

There were a number of workshops held in January across the Gulf of Mexico, one in Florida, one in Texas, and one in New Orleans. I am going to talk about the central region, one which encompassed Louisiana, Mississippi and Alabama. They came up with a number of research priorities. These were researchers, academicians, State agency people, Federal agency people. They perceived as problems in the Gulf as follows: Number one, for the central region, nutrient enrichment, particularly hypoxic zones; number two, habitat loss and restoration—an example of that would be effects on fisheries; number three, ecosystem modifiers such as nonpoint source contaminants; number four, trophic dynamics, particularly food webs and fisheries and how those interact; number five, freshwater input—an example of that would be freshwater as a source of nutrients and toxins; number six, the introduction of toxic materials—I might add that, in Louisiana that would rank a bit higher; number seven, population dynamics, for example, larval dispersal and recruitment processes in key Gulf species, fisheries again; eight, coastal erosion, particularly the erosion of Barrier Islands and marshes, again, particularly severe in Louisiana; number nine, physical modifiers, such as dredging activities; number 10, salt water intrusion, again, a major problem in Louisiana—examples being the loss of the cypress forests and effects on fisheries; number 11, catastrophic events, such as hurricane and storm banks, and I do not have to tell you too much about Hurricane Andrew—I think you know about it—I think I know more than anybody here about it, our place got hit pretty bad; number 12, LUMCON species, such as the introduction of Nutria, and its effects on wetlands and coastal erosion; number 13, effects of global change.

I believe the RMRB's time has come. A number of agencies are sponsoring research in the Gulf. The agencies and these working groups are complementary, integrating with each other. What we need is increased coordination. I think the RMRB is placed well to do that and to help research from falling into the cracks, which we do not want to happen.

I would like to address a second major program—a planning process which has gone on within the past nine months in Louisiana, and that is the EPA EPSCOR Program in Louisiana. EPSCOR is an acronym which stands for Experimental Program to Stimulate Competitiveness in Research. Now, Louisiana is one of 19 states in the U.S. that is well below average with respect to Federal funding and research.

EPSCOR is essentially a "bootstrap program"—it is a program dedicated to helping Louisiana to build its research infrastructure. LUMCON, Louisiana Universities Marine Consortium, is administering that planning grant (which has just finished).

We held a workshop very similar to the RMRB workshop, encompassing Louisiana's researchers, State agencies and so forth who identified priorities in environmental science and engineering, in the areas of research, education, policy and regulation. We found great overlap with the RMRB priorities. To mention them briefly, they are: Coastal wetland loss and effect of remediation processes; pollution prevention, again, non-point source pollution or impacts in remediation; development of a state-wide geographical information system (GIS); enhancement of risk assessment techniques; groundwater contamination, which is considered to be a major problem in Louisiana; habitat loss and destruction; toxicology and environmental health; large-scale changes in natural processes; and development of research centers.

We had $15.4 million in concept proposals that came in from our researcher community. EPA has slated possibly $200,000 per annum for three years in funding for this. There is a problem here. I believe that EPA should expand its EPSCOR support for some of these projects here, perhaps through another program.

In general, LUMCON also supports a proposal which is being proposed for a Gulf NURP program, or a National Undersea Research Program. In fact, we would be happy to administer any other program that NOAA prefers. Our Office of Special Programs looks after the DOI/MMS University Research Initiative Program dealing with OCS problems and the effects of the oil and gas industry on the continental shelf, the NOAA/NMFS National Shellfish Indicator Study (NIS), and the EPA-EPSCOR program.

My final recommendations to the panel are to increase funding to Federal agencies for marine science in the Gulf, addressing the above issues, particularly in Louisiana, with respect to EPA, NOAA, NMFS and MMS; to coordinate or allow coordination of Gulf research through the Gulf RMRB, Regional Marine Research Board, which also incorporates Sea Grant money; and lastly, to increase funding to the RMRB to support this effort.

Thank you very much for listening. I would be happy to entertain any questions.

[The prepared statement of Dr. Sammarco can be found at the end of the hearing.]

Mr. ORTIZ. Thank you. Deyaun Boudreaux, please.

STATEMENT OF DEYAUN BOUDREAUX, ENVIRONMENTAL DIRECTOR, TEXAS SHRIMP ASSOCIATION

Ms. BOUDREAUX. The Texas Shrimp Association is a non-profit organization organized in 1950 to advocate for the harvest of native shrimp and their habitat in the western hemisphere, and to participate in trade talks at all levels of Government for the preservation of this harvest from the stewardship perspective.

The TSA harvesters have distinguished history of getting along with all of the user groups that have made up the traditional family of resource-based enterprises in the Gulf of Mexico rim, while always speaking out to protect the aquatic resources, resource assets, the wetlands, marshes and the rivers that enable to oceans to maintain their viability.

In the way of cooperating and being a part of the partnerships that are going on, our history goes back quite a ways. The most distinguished one I feel has to do with the Honorable Congressman Ortiz, because it was this Congressman that made the first appointment for representatives of the Texas Shrimp Association and others to visit with EPA in 1986, to start the Gulf Initiative, which resulted in the Gulf of Mexico Program.

New York figured into this, sir, because one of the damaged areas associated with some pollution in New York had to do with impact on fisheries, and this helped the Congress to recognize that this was a factor in Committee activities. So, thank you. Those of us in the Gulf really appreciate this.

We have also cooperated with the General Land Office, with the Marine Debris Pollution. We are working with the General Land Office also to develop the South Texas Space Consortium, which will mean an application of NASA and United States Department of Agriculture technology, working with the University of Texas, and Texas A&M. We are also trying to bring some military technologies into application for coastal and fisheries monitoring. We would hope that Congress would smile favorably on this project that GLO is heading up.

We are entering into some ocean pollution act partnerships with GLO on waste oil facilities, and also with the Sea Grant people at Texas A&M to help us bring our marine maintenance and repair facilities into compliance. We are participating with the border plan. TSA has a representative on the Integrated Border Environmental Plan for EPA.

My first observation, as far as what Congress needs to be looking at in the future has to do with our failure to implement our national oceans policy which is embodied only in a Presidential document which was signed in 1983. This was the result of more than a decade of work, starting in 1972, and it stands in place of the United States' signature on the laws of the sea, which is the international code for the oceans.

The policy statement that we have is true to the international code and a priority of the uses as stated, but it did not have any means of ratification in the U.S. Senate. Congress was unable to pass legislation to create a commission to define a national ocean policy and the agencies under whose regulation the Gulf of Mexico users fall, have attempted to interpret their mandates from Congress in a variety of ways under the Ford, Carter, Reagan, Bush and now the Clinton Administration. Some of these have been most unsuccessful.

I feel that we must return to the guidance that is provided in the 700 years of history behind international maritime law. This can help us unsnarl the tangle of regulations, the misapplication of management strategies when we really need environmental action, and cut down on the manipulation of laws and regulations of one agency and its constituents against another agency and its constituents.

In the case of the Gulf of Mexico, man has caused and will cause in the future, changes that are affecting every component of the system. After the studies of which I have been a part, I conclude that the Gulf of Mexico is an integrated single system that functions something like a fine watch. Ninety-eight percent of all of its species are estuarine-dependent, and each of the systems hosts different species out of these 98. If you were to take a fine watch and break part of the teeth out of one of the gears and attempt to add those teeth to another gear way down the system it would not work.

Thank you.

[The prepared statement of Ms. Boudreaux can be found at the end of the hearing.]

Mr. Ortiz. Thank you. Right on time, Deyaun.

Ms. Campbell.

STATEMENT OF MARY LOU CAMPBELL, NATIONAl COASTAL COMMITTEE, SIERRA CLUB EX-COM

Ms. Campbell. Thank you.

Good morning. Thank you all for being here. My name is Mary Lou Campbell, and I do represent the Sierra Club. I am a volunteer, as you know. The Sierra Club is a grassroots organization, so most of the workers in the field are volunteers. You all have shown yourselves to be very aware of the Gulf of Mexico. Because you are on this Committee, you have done your homework, and we appreciate your coming and listening to us this morning.

The Gulf of Mexico has a rich historical background, and I know Congressman Ortiz is very aware of that. The broad sandy beaches were used as road ways when the first Europeans set foot on our continent, before the locomotive, and the automobile. In fact, the

Texas Open Beaches Act, the Act that guarantees to the public the right of lateral movement and access to the beaches of Texas has its basis on this historical movement of men and animals and supplies.

I believe that you acknowledge that the Gulf of Mexico is threatened and endangered, and many have testified to that. Just this week a report was issued by the American Rivers Association, listing the Rio Grande River as the North American Continent's most endangered river. The Rio Grande, of course, is a tributary of the Gulf of Mexico. It carries its burden of pollutants, in turn, to the Gulf.

There are other rivers that might be just as dangerous. The Mississippi drains 33 of our states. The Rio Panuco and the Usumacinta of Mexico have undoubtedly not been tested to any great extent. It is interesting to note that when one inquires about the specifics of the pollution of the Rio Grande, one is told there are no baseline studies by which to measure. Many agencies, Federal, State and private, are now trying to remedy this omission.

The International Boundary and Water Commission, which has the oversight for water quality in the river, has seemingly chosen not to exercise this option in the past. The heightened interest in the Mexico/United States border brought about by the North American Free Trade Agreement negotiations has served to bring much attention to the Rio Grande. We who live and work in the Valley are most concerned that the only source of domestic water for millions has been allowed to deteriorate from the once pristine stream that rises in the Colorado Rocky Mountains. This is the water that we drink, bathe our children in, irrigate our food crops. It is important that strong enforcement measures for the proper disposal of domestic and industrial waste be written into the NAFTA, as well as strong clean air language.

Little is said about the impact of the agreement on the Gulf, yet it too is one of our borders, as Garry Mauro brought out. This omission should be corrected.

The rivers contribute to the life of the Gulf of Mexico, the beaches, lagoons, estuaries and wetland systems which surround it. The rivers carry freshwater to the Gulf, which is most important to the species that live there. The rivers serve as nurseries and as food supplies for many marine and marine-dependent species. The rivers are a source of sand, but the damming and channelization of the tributaries and nourishment for the beaches has been cut-off. The beaches of the Gulf can no longer count on the rivers in their sand budgets.

The coastal Barrier Islands are dynamic, ever- changing and moving. Man calls this process erosion, but it is a natural process. It would not even be of concern were it not for the actions of man. Nature has as much use for one sand bar as another; but that is what the coastal barriers truly are—barrier bulwarks that were thrown up to protect the mainland. Man, through his action of building on the Barrier Islands and the construction of solid, so-called erosion control structures has changed the natural flow of sand and endangered the coastal islands and the lands they guard.

The Congress has shown itself to be aware of the dangers by passing the two Coastal Barrier Resources Acts, the latest in 1990.

The Coastal Management Act is another important tool in both educating the public to the importance of our coasts, and in formulating specific regulations. The erosion response structures usually sponsored by the Army Corps of Engineers, at worse, contribute to the problem of coastal erosion—at best are an expensive stop-gap measure. Sea-level rise is another factor that must be taken into account in both beaches and wetlands management.

Oil spills, which Garry Mauro spoke to so well, and petrochemical disasters are a perpetual threat to the life of the Gulf. We all remember the impact of the blow out of Ixtoc Uno in the Bay of Campeche. That certainly is a part of our Gulf, even though it is not in the United States waters. Fortunately, there was some time to prepare. The expected damages to the lagoons and estuaries did not occur. However, the tourism and commercial fisheries were imperiled. Stronger legislation and regulation as to the building of barges and tankers are in order and enforcement of those rules.

Good progress has been made in the area of oil spill response, but we still have our sensitive coastlines. The bays and estuaries must be protected for immediate response. The Gulf of Mexico is vitally important to our country. Five states border the Gulf. The Gulf of Mexico is also bordered by Mexico, Cuba, and certainly it is impacted by the Caribbean countries. We must strive to work more closely with the states and countries in order to clean up and protect the Gulf in what Garry called, and we all term "America's Sea."

Thank you.

[The prepared statement of Ms. Campbell can be found at the end of the hearing.]

Mr. Ortiz. Thank you very much.

Mr. Williams.

STATEMENT OF RICHARD J. WILLIAMS, PRESIDENT, WIMPOL, INC., HOUSTON, TEXAS, ON BEHALF OF NATIONAL OCEAN INDUSTRIES ASSOCIATION

Mr. Williams. Yes. Good morning, Mr. Chairman, members of the Subcommittee. I thank you for inviting me here today. As a Director of the National Ocean Industries Association, I am representing all facets of the domestic offshore oil and gas industry and our 300 member companies who are engaged in construction, diving, drilling, finance, geophysical exploration, service and supply and production of our offshore resources.

Attached to my written statement is a copy of an article from last May's issue of Offshore Magazine, which shows the balance between development of offshore resources and environmental protection of the unique marine areas in the Gulf of Mexico. The area discussed in this article is the Flower Garden Banks National Marine Sanctuary.

Mobil has been producing oil and gas from a platform about one mile from the East Flower Garden Bank causing no harm to the coral reefs. Earlier this month, Mobil won NOIA's award for excellence in environmental observation for its cooperative research program. Through this program, Mobil utilizes its facilities, including the platform at the sanctuary, for research and monitoring programs.

Mobil arranges transport, houses, and provides for Government and private scientists to monitor and study the environmental effects of offshore oil and gas operations. We at NOIA feel that this is an excellent example of industry working with the Government and academia to ensure the protection of unique marine environments, while safely developing this country's oil and natural gas resources.

I would like to speak to three topics briefly. Firstly, concerns many of the service company members of NOIA who have developed the technology funded by the oil and gas industries which can meet Federal agencies urgent information needs. Federal research and related Gulf of Mexico programs can benefit from the increased utilization of the valuable expertise that resides in the private sector. One concept being discussed is NOAA's National Ocean Service interest in contracting for acquisition of coastal geodetic survey data. Commercial organizations are eager to undertake this work. NOIA believes that such a concept can and should be expanded.

NOIA members created and perfected many of the technologies that have provided more accurate and complete bathymetric data, surveys of the sea floor, sediment characterization and physical and chemical oceanographic modeling.

Through a public/private partnership approach, technology transfer between the Federal Government and private industry could provide benefits for both. The needed dialog between the service and research components of the Federal agencies can be established. Most importantly, the Department will be able to reduce Federal administrative and personnel costs while promoting economic and environmental progress.

I would welcome the opportunity to work with the National Ocean Service and other Federal agencies active in the Gulf of Mexico in this capacity.

There is also a pressing requirement by NOAA for updated charting information to improve navigation safety. The offshore industry has the technological resources and expertise to meet this urgent demand. Industry has developed and continues to refine and improve full coverage survey technology, including side scan sonar and shallow water multi-beam survey systems. These and other similar technologies provide a valuable resource to the Federal Government and the users of the Gulf of Mexico.

My second topic is to promote environmentally friendly technologies which our industry is trying to introduce to the Gulf of Mexico. One example is the development of synthetic biodegradable, extremely low toxicity drilling fluid systems. To date, new drilling fluid technology has been employed successfully in overseas projects, satisfying operational requirements, enhancing environmental responsibility and affording a cleaner, safer workplace. Yet, even with strong scientific support for its use, existing domestic regulations and policies hamper the realization of this technological benefit by our own companies, environment and people. This technology was created in the United States by U.S. companies, but we are not able to get a permit for its use at home. The

Federal Government has failed to recognize its benefits to the marine environment and its application to offshore operations, while other countries, such as Norway and the United Kingdom are able to reap the benefits.

My third topic is to appeal for adequate and proper funding of offshore study programs. The MMS Environmental Studies Program needs more money to carry out its responsibilities. The National Research Council states: "In recent years, environmental studies budgets have been barely adequate, at best, to conduct needed studies to meet the demands of the OCS leasing schedule. Recent budgetary decisions have hampered the program by reducing funding in the face of increasing demands that the Environmental Studies Program meet its mandate."

Finally, I just want to express my pleasure in the existing working relationships among all of the Federal agencies with responsibilities in the Gulf of Mexico, and we look forward to opportunities to work with these agencies and provide input where it be helpful.

Last year's efforts between NOAA and Texaco, on the Texaco Pipeline Project near the Flower Garden Banks is just the latest example of how economic development and environmental protection are not mutually exclusive when we can work together.

Thank you.

[The prepared statement of Mr. Williams can be found at the end of the hearing.]

Mr. ORTIZ. Thank you, Mr. Williams.

Mr. Behrhorst.

STATEMENT OF VERNON BEHRHORST, EXECUTIVE DIRECTOR, GULF INTRACOASTAL CANAL ASSOCIATION

Mr. BEHRHORST. Dale Miller extends his greetings to you, of course. The Intracoastal Canal Association is quite pertinent to Corpus Christi here. One of the instigators—well, some people would use the term—Dale's father, Mr. Roy Miller, who was onetime mayor of your city here.

Some people ask why are we here talking about the Gulf Intracoastal Waterway? Very simply, the Gulf Intercostal Waterway extends 1,200 miles along the Gulf Coast from St. Marks to the Rio Grande. Through all of those 1,200 miles, almost entirely, it goes through our coastal wetlands, which are the source of the vitality of the Gulf of Mexico. So, we are here. We do have some problems with which we need to cooperate with others, as Conrad Fjetland said. We need to work together in a constructive, good faith manner starting now. I think what this is all about, Congressman is what you are hearing here. Let's get together and work on these problems here.

I did provide you with a video which tells about the Intercostal Waterway and its importance, so I will not be there. I will make one point on that video—is that when I was trying to raise the funds for it, talking to the industry about environmental issues that were going to be in it, my point was, I said, if you do not address the environmental issues, they will be addressed and they may not be addressed the way you would like them to be. So, this is very important.

Just very briefly, there are three areas where we have issues of concern. One—this has already been mentioned—the provision of adequate environmentally- acceptable dredge disposal places and the use of dredge material. It is becoming a big issue. Texas here is making a good attempt to do it. We have a coordinating committee chaired by the Texas Department of Transportation doing this. We still have a long way to go, but we are addressing the issue. Some places the problems are different. In Louisiana, we have a great variety of ways of using dredged material in Louisiana, one, because we have a much larger loss of wetlands. This is one area where we need consistent cooperation amongst the Federal and with the State agencies, particularly because some states vary with others as to the requirement.

Two, the whole problem of erosion. Congressman, you have been to Sergeant Beach. It is a prime issue. We are trying to get that straightened. If it goes, it goes. The erosion on the Barrier Islands, if I may use the term, is very important because our waterway goes behind the Barrier Islands for about half of its distance. They are very important, and we need to work with them as well.

Another area where we have concern is the implementation of OPA 1990, which, of course, is essential we all agree. The waterways industry does have some problems with the different requirements, which are provided in the Act to allow states to effect more stringent regulation. Florida is very bad. Some operators are not even operating in Florida. Texas is a little different. Louisiana is different. More consistency, because we are dealing with the waterway which is involved in interstate commerce. It is not a state waterway, it is a national waterway. These national issues need to be addressed as well.

The last thing I just briefly want to mention to you—for many of you it is a new venture, adventure, if you will, extending the Intercostal Waterway into Mexico. Now, this looks good. They are addressing the issues in Mexico. There are many environmental issues there. I can tell you the people here, they are beginning to address the environmental issues of this, and there are some significant ones I know. It fits into this whole package. So, very briefly, these are some of the things.

Thank you for the opportunity.

[The prepared statement of Mr. Behrhorst can be found at the end of the hearing.]

Mr. ORTIZ. Thank you, sir.

Mr. Carey.

STATEMENT OF JOHN P. CAREY, GENERAL MANAGER FOR ADMINISTRATION, ALABAMA STATE DOCKS, ON BEHALF OF THE GULF PORTS ASSOCIATION

Mr. CAREY. Mr. Chairman, I am pleased to appear before the Committee today to testify on the Federal Government's role in preserving and improving the economic and ecological aesthetic values of the Gulf of Mexico.

I have called Texas home for most of my life. I was doubly pleased that I was invited to appear before your Committee.

My focus today is multi-fold. In representing the Gulf Ports Association, I will address the environmental concerns of deep water ports, and the role of ports, such as Mobile, as economic generators for our respective states. Most importantly, however, is my desire to facilitate communication, education, and coalition building among the interests represented at this hearing.

GAO recently documented to your Committee the impact for the Nation of water-borne trade. Congressman Fields also has covered some of the statistics on how the Gulf ports impact on the economy of our Gulf, so I will not go into those at the present time.

To compete in today's global economy, ports are faced with several major challenges. Public ports generally must operate on a competitive basis without direct public financial assistance. We are faced with an aging infrastructure requiring constant rehabilitation and renovation. We must diversify our source of revenue which, in turn, leads to the need for financing to support capital expansion.

Finally, we are committed to seeking a balance between economic development and environmental concerns. With these facts in mind, port associations have been actively developing a statement of environmental policy. Some of the principles included in our statement are as follows. We believe that public ports benefit from healthy land and water resource ecosystems and bear a special responsibility to safeguard and preserve them for future generations.

We believe priorities must be established to ensure maximum environmental benefit at the lowest reasonable cost, because it is important to do so for the quality of life on the Gulf, not just because it is politically or socially popular to do so.

We believe pollution should be prevented at its source. A recent article in the Conservative Digest reviewed the history of industrial development when waterways were used as convenient dumping grounds to shove waste out the back door. Gulf ports have been the recipients of such pollution and are the victim of an historical disregard as to the cumulative impact of such discharges.

We believe enhanced effort should be made to limit non-point run-off and other persistent sources of pollutants to our nation's waterways. Cleanup cannot be fully effective until control of pollutants flowing into the waterways is achieved.

We believe in cooperation with other groups to implement pollution controls. The Port community is committed to assist appropriate regulatory authorities in developing plans that are realistic, implementable and identify available funding sources.

We believe Federal funding must be provided to implement environmental laws, and that we are faced with complying with the mandates of the Clean Water Act, Toxic Substance Control Act, the Water Resource Development Act, and a multitude of other environmental laws and regulations. We feel that no new mandates should be imposed without comparable funding increases.

We believe in the need for a national dredge material management policy that recognizes the necessity for timely, cost-effective and environmentally protected dredging of our navigable waterways and ports. All disposal options that are environmental responsible and economically feasible to include open water placement, when dredged material meets the appropriate scientific criteria, must be available for consideration.

The senior management levels of Federal agencies have recently begun to recognize and articulate that dredge material is a valuable resource, not a waste product. Federal policy should direct Federal agencies at the field level to seek out and fund beneficial uses of dredge material wherever practical.

What I could show as an example of this is in the State of Louisiana, where the Coastal Wetland Planning and Protection and Restoration Act has done many things for each of the field agencies, and the Federal agencies have identified specific projects that can use beneficial use of the dredged material. It is working well.

We believe environmental permitting should be streamlined. Timelines need to be established and enforced. We believe the protection and enhancement of wetlands, through the establishment of mitigation banks, is a cost- effective method of encouraging the preservation of wetlands. The development of alternative projects, such as artificial reefs and disposal islands can mitigate for habitat impacts of port development. The unquestioned success of Gaillard Island in Mobile Bay and the Offshore Burm at the mouth of the Mobile Ship Channel are excellent examples of this principle.

In summary, the Gulf Ports believe that, given a level playing field, we can compete with any port range in the United States, and the United States can compete in the global economy.

The Gulf Ports Association has recently provided to their respective Congressional delegations a more detailed packet of our legislative issues and concerns. If more copies are needed, they can be provided.

Once again, let me thank you for allowing me the opportunity to testify on behalf of your efforts on the Gulf of Mexico.

[The prepared statement of Mr. Carey can be found at the end of the hearing.]

Mr. ORTIZ. Thank you very much, Mr. Carey.

Ms. Stewart.

STATEMENT OF SHARRON STEWART, TEXAS REPRESENTATIVE, GULF OF MEXICO CITIZENS ADVISORY COMMITTEE

Ms. STEWART. Thank you, Congressman, Mr. Chairman, members of the Committee. I appreciate the opportunity of being invited to testify here.

The statement by Congressman Fields, Mr. Cannon's testimony, and Garry Mauro's testimony pretty well obliterated the need for me to repeat much of what has been said. I would like to take one moment to say something that has not been said enough. To do that, I am going to give you a little analogy.

The first time I testified before this Committee it was in 1979. I was representing the Texas Deep Water Port Authority as a Commissioner, and the National Advisory Committee on Oceans and Atmosphere, which was to be proceeded in 1984 by an Ocean Policy Commission, which never happened. That was the year of oil spill legislation. The votes were in Congress. It was sewed up. Several congressmen came to be supporters of that bill and said we need to pass legislation to clean up hazardous waste sites. We have a lot of problems; but if we can tag it onto your Oil Spill Bill called Superfund, we know we can get it through. We know what happened. Superfund passed, there was no oil spill legislation attached. The promise that a year later Congress would pass oil spill legislation disappeared. Ten years later, with the *Valdez* incident, the Nation was not prepared. There was no Federal legislation.

When this program was conceived—the Gulf of Mexico Program was conceived in '86, and begun in '88, there was no legislation. This is a program that can be done away with by the stroke of a pen.

If you do not institutionalize this program now, when the votes are there it will not happen. I know there are several versions of propose bills, some that have been introduced, some that have not. From what I have seen of previous bills, and comparisons of those to be introduced, my suggestion to you is there are not all that far apart, please urge the sponsors to compromise, compromise, compromise, and get this legislation passed this year.

This program will go away if you do not institutionalize it when the votes are there.

Thank you.

[The prepared statement of Ms. Stewart can be found at the end of the hearing.]

Mr. ORTIZ. Thank you very much. I know that the Committee also has another schedule to tend to. In fact, we will be visiting the State Aquarium and the Oil Spill Control School, and the Tide Control Project here at the Corpus Christi State University.

I know that a lot of members who are here and others will be submitting some questions to all of this panel. I know that one of the questions that we are going to ask—we want to know what are the most critical problems facing your organization as related to the State of the Gulf of Mexico, and measures that we, as members of the Federal Government, can take to address these problems. This will be one of the questions that we will submit to you, and other questions so that you can respond in writing.

We certainly appreciate you testifying before this Committee today. I hope that this is a first step in the right direction. We can assure you that we want to work with you. We certainly appreciate my good friend, Mr. Hochbrueckner, being with us today. I can assure you that whenever you need us, we will be right there, George.

Now, at this time, if you would like to make a short statement before we adjourn this meeting today.

Mr. HOCHBRUECKNER. Thank you, Mr. Chairman.

I would also like to thank the panelists for sharing your valuable time with us. Obviously you were very straight-forward, articulate, and you made your points. I think that is what really counts. So, thank you very much for that.

Thank you, Mr. Chairman.

Mr. ORTIZ. Additionally, I want to especially thank the staff and the faculty of CCSU and Texas A&M for the help in setting up this hearing today. We could not have done it without your help. Finally, of course, the Coast Guard, thank you for bringing us here. Otherwise, it would have been a long way.

We will share this information with the rest of the members of the Subcommittee and the whole Committee. Again, thank you for being with us. I would like to thank two dear friends for helping us and staying with us today, Elisa Jasso, and Bob Bezdek, and my good friend who happens to be now in a region of Texas A&M. Would you like to say something?

Ms. JASSO. Yes. I would like to thank you, Congressman Ortiz and Congressman Hochbrueckner, on behalf of the Board of Regents of the Texas A&M University System. We thank you so much for bringing this historic hearing to one of our universities. It is very necessary for us to work together on this most critical issue. We look forward to working with you on this.

You know that Texas A&M has a very strong reputation of leadership in the field of oceanography and earth sciences, as well as environmental protection. So, I look forward to working with you both.

CCSU would like to present you with a token of their appreciation.

Mr. ORTIZ. Thank you.

I think the staff got in yesterday around 6:30, and after they have been here a day and a half, they are looking at ways to justify them coming back again.

Thanks to the staff for a job well done.

[Whereupon, at 11:50 a.m., the Subcommittee was adjourned.]

STATEMENT OF
JONATHAN Z. CANNON
ACTING DEPUTY ADMINISTRATOR
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
SUBCOMMITTEE ON OCEANOGRAPHY, GULF OF MEXICO AND OUTER CONTINENTAL SHELF
OF THE
HOUSE MERCHANT MARINE COMMITTEE

APRIL 23, 1993
CORPUS CHRISTI, TEXAS

Mr. Chairman, I am pleased to testify before you today on the role of the Environmental Protection Agency (EPA) in preserving and improving the ecological, economic, and aesthetic value of the Gulf of Mexico. We believe that the Gulf of Mexico Program is an experiment in good government and a new way of doing things. It is a call to action to all of the people who care about the Gulf to work together to define goals and to take responsibility for what happens to the Gulf.

The result is that people come to the Program for different reasons: some because they want to protect ducks and/or wetlands; others because they are shrimpers or fisherman, or because they depend on the Gulf as a source of food for their families; and some because they are in businesses that depend on the Gulf. Our task is to provide the leadership that gets all of the diverse parties involved in finding meaningful solutions to the environmental problems in the Gulf.

The establishment of the Gulf of Mexico Program was catalyzed by a large number of citizens who turned out at public meetings in 1986 to express their concern about incineration of hazardous wastes in the Gulf. The response of these citizens, coupled with indications of environmental degradation in the Gulf, prompted the EPA to set up the Gulf of Mexico Program in 1987. The EPA, the United States Department of Agriculture/Soil Conservation Service, the U.S. Department of Interior/Fish and Wildlife Service, the Department of the Army/Corps of Engineers, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration/National Marine Fisheries Service and HHS/FDA all provide personnel to participate in the shared leadership of the Program. Crucial to this effort from the outset has been active participation by the Gulf States and a number of Federal agencies with resources and authorities that complement EPA and must be brought to bear if the program is to have the comprehensive scope that has been envisioned for it. Representatives of these Agencies as well as each of the Gulf States sit on the Policy Review Board and the Management committee for the Gulf of Mexico Program.

We have learned from the Great Lakes Program and the Chesapeake Bay Program that a cooperative forum provides efficiencies. It is also necessary to deal with the real ecological problems since these problems cross jurisdictional and statutory lines. Because the problems are complex, the States, citizens, environmental groups, and businesses must work together in good faith, and use the Federal government in the best sense as a coordinator of State actions.

In December of 1992, a "Gulf of Mexico Program, Partnership for Action" document was signed by representatives of: the Governors of the five States which border on the Gulf of Mexico; the lead Federal agencies, including the Army, Navy, Air Force, the National Park Service, the National Oceanic and Atmospheric

Administration, the Fish and Wildlife Service, the Soil Conservation Service, the Food and Drug Administration, NASA, and the Coast Guard; and, the Chair of the Gulf of Mexico Program's Citizens Advisory Council. The document sets out the goal of the Program, which is "to protect, restore, and enhance the coastal and marine waters of the Gulf of Mexico and its coastal natural habitats, to sustain living resources, to protect human health and the food supply, and to ensure the recreational use of Gulf shores, beaches and waters -- in ways consistent with the economic well-being of the region."

The agreement also lays out nine five-year environmental challenges. These challenges will define the direction of the Program's actions and activities for the next five years. The nine challenges are to: 1) significantly reduce the rate of loss of coastal wetlands; 2) achieve an increase in Gulf Coast seagrass beds; 3) enhance the sustainability of Gulf commercial and recreational fisheries; 4) protect human health and food supply by reducing the input of nutrients, toxic substances, and pathogens to the Gulf; 5) increase Gulf shellfish beds available for safe harvesting by 10 percent; 6) ensure that all Gulf beaches are safe for swimming and other recreational uses; 7) reduce by at least ten percent the amount of trash on beaches; 8) improve and expand coastal habitats that support migratory birds, fish and other living resources; and, 9) expand public education/outreach tailored for each Gulf Coast county or parish. To meet these challenges, the Federal agencies and Gulf States pledged to work together as a team.

THE PROGRAM

The Gulf of Mexico Program is one of the Agency's three Great Waterbody Programs. These programs are formed as partnerships with State and local governments, citizens, and the other Federal Agencies to identify and solve problems on an ecosystem-wide basis and to bring into the decision-making processes the people who live in the area and have a stake in the solution. EPA's base programs, such as the National Pollutant Discharge Elimination System program and other Agencies' base programs form the core of these Great Waterbodies Programs and are enhanced by the capabilities and authorities of all of the partners.

The main task of the Program is to develop and implement a management strategy aimed at protecting, restoring, and maintaining the health and productivity of the Gulf. EPA believes that the strategy should achieve a balance between the impacts and demands of human-related activities and the preservation and enhancement of the marine resources of the Gulf.

The Gulf of Mexico Program is developing long-range solutions to critical environmental problems in the Gulf of Mexico. These issues are marine debris, habitat loss, freshwater inflow, nutrient enrichment, toxics and pesticide contamination, public health, coastal and shoreline erosion, and living aquatic resources. Plans to address these problems have been completed for two of these, marine debris and public health, and six others are drafted or being developed.

The Gulf of Mexico Program is also successfully working with other major EPA programs of the coastal zone such as the Near Coastal Waters Program and the

National Estuary Programs (NEP). Presently, there are five national estuaries in the Gulf of Mexico region: Sarasota Bay, Galveston Bay, Barataria/Terrebonne Bay, Tampa Bay and Corpus Christi Bay, Texas, which was recently added to the NEP.

The Program has also supported the implementation of the Environmental Monitoring and Assessment Program (EMAP) throughout the Gulf region, which is a vital link in EMAP's ability to coordinate and communicate with state monitoring programs and to reduce the potential for costly duplication of effort. The program is also closely integrated with the interagency and intergovernmental Coastal American partnership.

SUMMARY OF THE PROBLEMS AND IMPORTANCE OF THE GULF

The Gulf of Mexico is a resource that yields many economic and aesthetic benefits for our nation and is a key to our regional and national economy. However, its bounty is not endless and today the Gulf is a resource at a fork in the road; one way leading to environmental integrity and one leading to continued decline.

We harvest its fish and shellfish, swim and boat in its water, extract its mineral resources, and use it for transportation. Unlike most estuaries in the east and west coasts of the United States, Gulf Coast estuaries are shallow and wind-driven. These estuaries average only eight to ten feet in depth. They are productive because of the warm climate, the balance of fresh and salt waters and the abundant, vegetated habitat. Many Gulf Coast fish species which we harvest commercially spend much of their life cycle in these estuarine nurseries.

One of the threats to these areas is excessively low dissolved oxygen in the water column, a condition called hypoxia. This condition may be attributable to excess levels of nutrients in Gulf coastal waters and estuaries. These nutrients are caused by runoff from fields, improperly treated sewage, and possibly air deposition. Recently, an hypoxic area of over 3,000 square miles in size was documented off the Louisiana and Texas coasts.

Critical habitat is being lost through the alteration and destruction of marshes, mangroves, and seagrass beds along the Gulf Coast. For example, the valuable coastal wetlands of Louisiana have been disappearing at rates of approximately 30-40 square miles per year. One reason that this statistic is so alarming is that over ninety percent of the commercial fish species harvested in the Gulf depend on coastal wetlands for at least part of their reproductive cycle. Concerns about human health have resulted in the permanent or conditional closure of 3.4 million acres (57%) of shellfish growing areas along the Gulf Coast.

The ecological balance of the Gulf is very sensitive to man's activities along its coastal shores and up the tributaries. Construction of navigation canals, levees, and pipeline canals may jeopardize wetlands. Leveeing the Mississippi River may limit the availability of sediment-laden fresh water to build up the deltaic marshes. Navigation canals can allow salt water intrusion which can kill vital habitat such as marsh grass. Because the Gulf coastal estuaries are relatively shallow, extensive dredging (55% of the nation's total) is necessary to keep the numerous national and international shipping lanes open for vital commerce. Rivers also carry pollutants from upland sources into Gulf Coast estuaries and the effects of certain pollutants are not well known, nor is there good data on the interaction of various manmade organic chemicals with the natural environment. Currents in the Gulf also tend to converge and push marine debris in a westerly direction from Florida and from the northern and eastern parts of Mexico, towards the Gulf coast of Texas.

The more we understand about the Gulf ecosystem, the more we understand the need for careful and balanced management approaches. This fact is underscored when a brief review is conducted regarding some of the economic benefits and values received from the Gulf by the United States: the U.S. Gulf of Mexico yields more finfish, shrimp, and shellfish annually than the South and Mid-Atlantic, Chesapeake, and Great Lakes regions combined; Gulf coastal wetlands comprise about half the national total; oil and gas from the Gulf account for about 90% of U.S. offshore production; tourism-related dollars in the Gulf Coast states contributed an estimated $20 billion to the economy, drawing millions of sport fishermen and beach users annually.

PROGRAM ACCOMPLISHMENTS AND CURRENT ACTIVITIES

Today I am pleased to inform you that we are beginning to see progress on our effort to protect and improve the environmental quality of the Gulf of Mexico. For example, demonstration projects which are a means to try new technologies or new ways of doing things have been developed to control nutrients and address the loss of critical Gulf habitats. The Program Office intends to find ways to transfer the successful technologies to other Gulf areas.

These projects include a rice fertilization project in the Colorado River Valley, Texas. The expected result is to reduce nitrogen application by as much as 25%, thus reducing nitrogen run-off into surface waters from agricultural operations. Shellfish restoration projects are underway in Louisiana, Alabama and Florida. Such projects are seeking to use innovative technologies to filter human wastewaters that are impacting shellfish growing waters. A seagrass restoration project in Mobile Bay, Alabama, is ongoing and will use new techniques to re-vegetate this vital habitat.

One of the most critical issues facing the Gulf is the continued loss of vital habitat. The Program initiated a Gulf Ecosystem Management Sites program (GEMS) to develop methods and tools for establishing increased numbers of special estuarine management areas along the Gulf Coast. We have already seen the benefits of such an approach in the Graveline Bayou coastal preserve established by the State of Mississippi. By working cooperatively with numerous public and private sector partners, the Gulf Program was able to assist the state in setting aside over 600 acres of pristine coastal habitat. This designation will not result in the loss of recreational and other beneficial uses. Rather, this designation will allow compatible uses by the public and also protect this area from encroachment by future development.

Another area of importance impacting the coastal zone of the Gulf is the improper functioning of septic systems. Run-off contaminated with human waste from malfunctioning septic systems degrades valuable habitat and directly impacts the water quality of many Gulf Coast estuaries. The sandy soil which exists throughout much of the Gulf coastal zone is incompatible with typical methods of septic systems which filter pollutants through the soil. New technologies and approaches which are affordable to the average citizen must be found and encouraged in order to alleviate this problem. The Gulf of Mexico Program is actively working to bring together experts from across the Gulf of Mexico to establish and implement criteria that will improve the water quality of recreational and shellfish growing waters across the Gulf. The Program is funding a workshop sponsored by the Florida Department of Health and Human Services this summer.

We believe this workshop will bring together the necessary experts to establish important guidelines and criteria which can be readily implemented at the state and local level. By working with those agencies that have a responsibility for protecting human health and environmental quality, the Program can make important progress in this area.

The Gulf of Mexico Program has worked vigorously to support efforts to protect the Gulf from the ever growing threat of marine debris. Marine debris across the Gulf averages more than one ton per mile, damages commercial and fishing vessels and kills thousands of marine mammals and shore birds. We are active partners in the "Take Pride Gulfwide" beach cleanup campaign, have initiated a Boater's and Fisherman's Pledge for a Clean Gulf, and have developed and worked to implement a comprehensive Marine Debris Action Plan. We have also been actively engaged in ongoing efforts to establish the Gulf of Mexico and the Caribbean as a special area under the International Convention for the Prevention of Pollution from Ships (MARPOL Annex V). Such a designation would make it illegal to discharge all nonbiodegradable garbage and solid waste into the waters of the Gulf. Our Program has also provided leadership in the area of public outreach and awareness so that all citizens living along the Gulf Coast will understand and appreciate the value of this unique body of water. The Program has formed an interagency steering committee to foster the Year of the Gulf celebration which runs from the summer of 1992 to the summer of 1993. We have also developed two major environmental symposiums to involve and educate the public about the economic and environmental importance of the Gulf. These two symposiums held in New Orleans, Louisiana (1990) and Tarpon Springs, Florida (1992) have exceeded our expectations as a means of communicating the importance of the Gulf to critical target audiences. The Program is now in the process of planning a third symposium which will be held in Texas during early March of 1995.

SUMMARY AND CLOSING

Mr. Chairman, the Gulf of Mexico Program is a collaborative response to the region's concern for its coastal environment. The willingness of its stakeholders and participants to improve the Gulf environment as an ecosystem has been well established. Our desire is to move forward in a successful manner. We have a vision. We have defined goals and objectives that will challenge us during the next five years. We know what actions are needed. Our challenge is to transform the deep commitment to the Gulf held by all partners into a realization of the goal of a healthy, thriving Gulf of Mexico.

TESTIMONY OF
DR. DONALD SCAVIA
DIRECTOR, COASTAL OCEAN PROGRAM
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

BEFORE THE SUBCOMMITTEE ON OCEANOGRAPHY,
GULF OF MEXICO, AND THE OUTER CONTINENTAL SHELF
MERCHANT MARINE AND FISHERIES COMMITTEE
U.S. HOUSE OF REPRESENTATIVES

FIELD HEARING
CORPUS CHRISTI, TEXAS
APRIL 23, 1993

Mr. Chairman and members of the Subcommittee: I am Dr. Donald Scavia, Director of NOAA's Coastal Ocean Program Office and I am pleased to be here today to discuss NOAA's role in the Gulf of Mexico.

NOAA's Role in the Gulf of Mexico

NOAA sponsors a broad range of observational, assessment, research, management, and predictive services that are being used to address the growing concern over the environmental quality and economic sustainability of resources of the Gulf of Mexico. Focusing on NOAA's work in coastal oceanography, I will discuss with you today our agency's commitment to preserve and enhance the resources of the Gulf of Mexico.

The Gulf of Mexico is a major resource to the Nation. The Gulf is bordered on three of its sides by five U.S. coastal states and it stretches along approximately 1,600 miles of coastline. It is an exceptionally productive sea that yielded 1.7 billion pounds of fish and shellfish in 1991. In addition, the Gulf supports over one-third of the marine recreational fishing activities in the continental United States. The Gulf's coastal estuaries, wetlands, and barrier islands provide important habitat for large populations of wildlife and provide critical habitat for a large percentage of the migratory waterfowl traversing the United States.

NOAA is the lead federal agency in the development and dissemination of scientific information and products for the Nation's estuarine and coastal ocean waters. In the Gulf of Mexico, NOAA is dedicated to improving our scientific understanding of environmental problems, particularly those concerning circulation and freshwater inflow; toxics, nutrients, and pathogens; habitat; living resources; and protecting habitat essential to living marine resources. NOAA is also committed to assisting Gulf States in coastal zone management and managing and protecting coastal and estuarine living resources.

To improve our scientific knowledge of the Gulf's ecological systems, NOAA compiles data and information to describe and assess the current ecological status of Gulf estuaries and coastal areas, conducts research related to physical processes and human impacts, and provides this information to agencies (which includes NOAA) that are responsible for managing natural resources along the Gulf coast.

NOAA collects and archives extensive data files for oceanographic, geophysical, climatic, fisheries, wetlands, and pollution data for the Gulf of Mexico. NOAA's archives include not only data collected from conventional observations, but also satellite data on sea surface temperature in support of environmental quality and fisheries productivity.

NOAA has approximately 1,500 employees at 90 locations among the states of Alabama, Florida, Louisiana, Mississippi, and Texas. Total NOAA expenditures for its operations in the five Gulf states in FY 1992 were approximately $125 million, including grant obligations. In the Gulf of Mexico, NOAA maintains coastal and marine research facilities, National Estuarine Research Reserves and National Marine Sanctuaries. It oversees and provides implementation grants for approved Coastal Zone Management Programs in four coastal states and is assisting in developing a fifth program. NOAA has direct ties to universities and colleges through the National Sea Grant College Program involving institutions along the Gulf coast. NOAA's programs address not only national-scale coastal and estuarine issues, but also specific problems affecting individual estuarine and coastal ocean systems in the Gulf of Mexico.

NOAA's Base Activities in the Gulf of Mexico

NOAA is mandated by Congress to administer programs that encourage and assist with the wise management of the Nation's coastal and estuarine resources. In particular, NOAA administers programs to help manage fisheries, endangered species, marine mammals, estuarine habitat, and coastal resource uses. NOAA also provides expertise to federal and State agencies that have management responsibility in coastal areas.

In the Gulf of Mexico area, the National Marine Fisheries Service (NMFS) maintains four fishery laboratories which assist with cooperative research on Gulf projects. The NMFS Habitat Conservation Program carries out a variety of management and research activities. This includes developing impact analyses and recommendations to reduce degradation or loss of estuarine habitats caused by development and other factors. The recently created NMFS Restoration Center is also expected to play a significant role in habitat restoration efforts in the Gulf of Mexico and nationwide.

Five NOAA ships regularly operate in the Gulf of Mexico. Gulf states are home port to three ships: the *Oregon II* and *Chapman* in Pascagoula, and the *Malcolm Baldrige* in Miami. NOAA's aircraft support is also based in the Gulf. NOAA's National Weather Service maintains a comprehensive network of coastal weather stations in the Gulf region, and the National Hurricane Center is located in Coral Gables, Florida. NOAA's National Ocean Service (NOS) operates an important tide and tidal current prediction program and a nautical charting program which maintains coastal charts for the Gulf of Mexico. NOS provides information for marine boundary determinations and generates records of long-term sea level change. NOS also manages specific programs directed at estuarine assessment. These programs have produced a National Estuarine Inventory and Atlas for the Gulf of Mexico, and the National Coastal Pollution Discharge Inventory.

Contaminant levels in Gulf sediments, bottom fish, and bivalves are monitored by NOAA at 68 National Status and Trends sites along the coast. The Oil Pollution Act of 1990 assigned NOAA major responsibilities for controlling and responding to oil spills including those which occur in the Gulf of Mexico. Within NOS, the Hazardous Materials Response Branch provides scientific support for responding to hazardous material spills (including oil spills) using numerical modeling, trajectory analysis, and environmental sensitivity analyses.

NOAA's Office of Oceanic and Atmospheric Research carries out research in the Gulf of Mexico through the National Sea Grant College Program, the National Undersea Research Program, and the Environmental Research Laboratories. The Environmental Research Laboratories have contributed significantly to our understanding of Gulf geology and physical oceanography. One of these laboratories, the Atlantic Oceanographic and Meteorological Laboratory, spearheaded earlier work on the role and dynamics of the Mississippi River plume.

The National Sea Grant College Program sponsors a variety of coastal and estuarine-related research, education, and advisory activities throughout the Gulf states. Working through a national network, the Sea Grant program has enabled researchers to examine scientific and technical problems of national and regional importance and allowed their findings to be conveyed to potential audiences, including resource managers, elected officials, private industry, and the public. In FY 1992, Sea Grant funding for programs in the states of Florida, Mississippi, Alabama, Louisiana, and Texas totaled $6 million in federal base plus other agency pass-through.

NOAA also administers the Coastal Zone Management Act that establishes a unique Federal-State partnership to promote the wise use and comprehensive management of the Nation's coastal resources to assure their protection for future generations while balancing competing national economic, cultural and environmental interests. NOAA provides assistance and oversight to states to implement regulatory, acquisition, education and other programs to protect wetlands, beaches and dunes and other coastal ecosystems, provide for public access to coastal areas, maintain and improve coastal water quality and manage coastal development to minimize loss of life and property from coastal hazards. Florida, Alabama, Mississippi, and Louisiana have approved Coastal programs and NOAA is working closely with the State of

Texas as it develops a program for federal approval. NOAA provided $6 million to the Gulf CZM programs in FY 1993.

Interagency Coordination

NOAA is an active participant in EPA's Gulf of Mexico Program. NOAA is represented in the Gulf of Mexico Program through individuals serving on the Program's Executive Committee, Policy Review Board, Technical Steering Committee, and Subcommittees. NOAA also has an on-site coordinator for the Gulf of Mexico Program Office located at Stennis Space Center in Mississippi.

NOAA is an active participant in EPA's five National Estuary Programs (NEPs) in the Gulf of Mexico: Sarasota Bay and Tampa Bay, Florida; Barataria/Terrebonne Bays, Louisiana; and Galveston Bay and Corpus Christi Bay, Texas. These programs identify estuaries of national significance and help to develop comprehensive management plans to ensure their ecological integrity. NOAA provides leadership on NEP committees as well as scientific and technical expertise concerning Gulf of Mexico oceanographic processes. NOAA contributes to the gathering and summarizing of existing knowledge concerning the state of the estuary as well as the physical, chemical, and biological factors controlling spatial and temporal changes. NOAA assists in identifying existing and potential problems in the Gulf, gaps in our knowledge, and approaches for improving our understanding.

In 1991, an agreement was signed between the U.S. Army Corps of Engineers and NOAA to initiate a national joint program to restore and create fish habitat. The program's goal is to increase marine fish and shellfish productivity and advance habitat restoration technology in conjunction with the Army Corps' Civil Works Program. It combines NOAA's technical fisheries expertise, and the Corps' water resources planning, engineering, design and construction capabilities. The program, which is implemented at state and local levels, has benefitted the Gulf region. One example involves the Gulf Intracoastal Waterway in Texas where marsh was created and water circulation was improved for aquatic organism access on two dredged material sites.

NOAA administers the Regional Marine Research Program (RMRP), which consists of nine regional marine research programs under the direction of regional marine research boards. One of these nine programs is for the Gulf of Mexico area. The regional board for this program is responsible for developing a regional research plan, soliciting research proposals, and overseeing the research program.

Coastal America Activities in the Gulf of Mexico

Coastal America was established in 1991 as a partnership between four federal agencies (NOAA, EPA, the Department of the Army, and the Department of the Interior), coordinated by the Council on

Environmental Quality. The partnership has grown to include 9 operating federal agencies. Coastal America focuses on three areas: nonpoint source pollution, habitat alteration and contaminated sediments.

In the Gulf of Mexico region, projects are initiated and supported at the local level by all Coastal America partners, and identified for priority funding through normal program channels. To receive Coastal America endorsement, the project must: meet the Coastal America criteria and produce tangible benefits in support of Coastal America goals; have a strong primary federal sponsor; have written affirmation from nonfederal sponsors regarding support and financial commitment; and be endorsed unanimously by all members of the Regional Implementation Team. I would like to discuss two projects of importance to the Gulf. One project will restore mangrove and seagrass habitat in Cockroach Bay, Florida; the other involved hundreds of volunteers in an effort to stabilize more than 3,500 feet of eroding shoreline at Aransas, Texas.

Cockroach Bay

In Cockroach Bay, off Tampa Bay in Florida, a Coastal America project is underway to restore habitat in a 651-acre area. EPA is working with NOAA (for the review of the biological monitoring program); USGS (for advice and potential modeling of tidal channels); FWS (for technical expertise); COE (for permitting, construction review and technical assistance) and the Surface Water Improvement and Management (SWIM) program of the Southwest Florida Water Management District. Although coordinated by SWIM, the project is being designed and implemented under the auspices of a 16-member advisory committee: the Cockroach Bay Restoration Alliance (COBRA). COBRA members include representatives from private firms and federal, state, and local governments.

The conceptual plan for Phase I, which involves 200 acres, has been approved by the COBRA, with a full implementation cost estimated at $2.1 million. Survey work and detailed design for the first six sections of Phase I have been completed. The removal of non-indigenous species and general cleanup efforts have already begun with the assistance of volunteers. It is anticipated that actual construction will begin in mid-1993, using the $1.3 million already committed for the project. This Coastal America project will advance the Cockroach Bay Rehabilitation Project time schedule by several years. The interagency cooperation facilitated by Coastal America is essential to its success.

Aransas Shoreline Protection Project

At the Aransas National Wildlife Refuge, Texas, a project led by the FWS was undertaken to construct shoreline and stabilization structures using cement bags along the Gulf Intracoastal Waterway where it crosses the Aransas National Wildlife Refuge. This shoreline is included in an area designated as critical habitat for the endangered whooping crane, and is threatened with erosion from wave action resulting from barge and boat traffic. The FWS and the COE provided coordination and technical support for this Coastal America project, while the Department of the Navy provided funding to increase the amount of shoreline protected and to develop an interpretive video on the plight of the whooping crane and cooperative efforts to save it. In addition, 38 private sector businesses, 3 conservation and special interest groups, 4 organized scouting groups, 5 Texas agencies, and 7 federal agencies contributed in-kind services worth an estimated $500,000.

Five hundred nonfederal volunteers contributed over 7,000 hours of labor, resulting in the protection of an estimated 3,850 linear feet of eroding shoreline. The majority of supplies, services, and equipment were contributed or donated by the private sector or by individuals. The shoreline protection project was completed on June 27, 1992. Coastal America participation in this effort increased the amount of shoreline ultimately protected by approximately 1,300 linear feet.

Special Programs in the Gulf of Mexico

NOAA has provided funds to the Coastal Zone Management Programs for Gulf states to support a variety of coastal initiatives. For example, the Alabama Coastal Area Management Program recently established the Alabama Coastal Foundation, a membership organization dedicated to the conservation of the natural and economic resources of the Alabama coast. The Florida Coastal Management Program has designated a construction setback line to protect beach and dune systems and a priority watershed management program to implement practices to reduce nonpoint source pollution. The Louisiana Coastal Resources Program has developed a Geographic Information System to facilitate the coastal permit review process and a geologic review procedure to provide technical assistance on oil and gas matters. Mississippi has developed enforceable Special Management Area plans to manage the Port of Pascagoula and the majority of sand beaches in the state.

The State of Louisiana contains 40 percent of the Nation's coastal wetlands, but is experiencing 80 percent of the Nation's coastal wetlands loss. A comprehensive approach has been developed to address the widespread and complex nature of the coastal wetland loss problem. A diversity of agencies is involved, and numerous solutions have been proposed. Projects are in various stages of implementation and will result in benefits to the fish and wildlife that the wetlands support.

NOAA recognizes that managers of the coastal and estuarine resources of the Gulf of Mexico must be provided with the best scientific and technical information available. NOAA has developed its programs in assessment, research, and management to accomplish this task, in light of the high biological productivity and economic importance of the Gulf of Mexico coastal and estuarine systems.

As the Nation's lead civilian marine science agency, NOAA's research programs are designed to improve scientific understanding of physical processes, ecosystem dynamics, and living marine resources, and to utilize this information to conserve and enhance fisheries and coastal habitats. NOAA research also responds to the needs of resource managers, who require a sound scientific basis for decision-making. NOAA is providing leadership in the national effort to protect and restore clean and safe environments, rebuild and sustain fisheries, and protect coastal communities with improved severe storm forecasts.

In 1990, NOAA initiated a Coastal Ocean Science Program specifically to strengthen NOAA's capabilities in monitoring, assessment, research, and management of coastal ocean resources. This permits NOAA to address a broad range of coastal issues, including a number of major problems being addressed in Gulf states. For example, the Coastal Ocean Science Program supports intensive studies in Tampa Bay and the West Florida panhandle to understand the bio-effects of toxic contaminants. It also supports research on seagrass and tidal wetland habitats in the

Gulf of Mexico focusing on the effects of nutrient enrichment, diversion of freshwater flows, and wetland habitat loss and alteration. Efforts using remote-sensing to map submerged aquatic vegetation in Florida and Texas to assist coastal resource managers are also supported by the program.

The Coastal Ocean Science Program's Nutrient-Enhanced Coastal Ocean Productivity Mississippi-Atchafalaya River (NECOP-MAR) study is a major five-year joint NOAA-academic study that is now in its fourth year of research. It is analyzing physical, chemical, biological, and geological processes that relate to anthropogenic nutrient enrichment and productivity in the vicinity of the Mississippi and Atchafalaya River outflows.

The increased nutrient overenrichment and resultant increased organic matter "fuels" an area of bottom water hypoxia (low oxygen) off Louisiana and Texas that extends up to 4,500 square kilometers in certain years, severely impacting populations of bottom-dwelling organisms. Increases in loadings for these nutrients are being driven primarily by farm fertilizer applications in the drainage basin. NECOP-MAR has developed a model to predict the results of lowering nutrient inputs. For example, the model has already shown that reducing nutrient runoff resulting from fertilizer application would significantly reduce the accelerated eutrophication occurring there. Results of the model are being used by EPA's Gulf of Mexico Program at

Stennis Space Center, Mississippi, to assess the impact of nutrient control strategies that might be implemented.

The problems of effectively managing conflicting resource uses within the U.S. coastal zone continues to challenge environmental resource managers. One frequently cited reasons for the problems is the poor application of the existing information base to specific management needs. The NOAA Coastal Ocean Management, Planning and Assessment System (COMPAS) developed by the National Ocean Service's Strategic Environmental Assessment Division and the NOAA Coastal Ocean Program, is designed to address this "information delivery" dilemma.

A central purpose of the COMPAS program is fostering a cooperative process between NOAA and state governments to identify and synthesize the best available information on selected resource-use topics. It provides information on coastal pollution, land use, habitats, and living marine resources. Detailed resource maps, location of wetland permits, point source discharge permits, shellfish growing waters, and other marine resource information already are available. COMPAS, however, integrates NOAA and state information with easy-to-use query, mapping, and analytical capabilities. The result is a powerful new tool for managing coastal resources.

The prototype COMPAS was developed for the State of Texas. COMPAS became operational in Texas in 1992 and an ongoing period of monitoring and assessing is demonstrating its effectiveness. A second application of COMPAS is being developed in cooperation with the State of Florida at the Florida Keys National Marine Sanctuary and a recent demonstration proved successful. The Florida system is moving NOAA a step closer to the development of a generic version of the program.

To get vital data and information into the hands of coastal zone managers, policy-makers, and scientists, NOAA is improving its existing network of communication and information transfer. NOAA's CoastWatch program is active in the Gulf of Mexico using remote sensing and conventional techniques for near-real-time observation of unusual environmental events, as seen in sea surface temperature satellite imagery, and habitat mapping.

NOAA and EPA currently sponsor, through the Marine Entanglement Program, educational activities aimed at debris generators. Two marine debris information offices are also operated under the program. In addition, NOAA sponsors research on the origin, amount, distribution, and particularly the effects of debris on marine species; conducts studies on the impacts of debris (such as lost fishing nets) on marine mammals and birds; and explores ways to reduce the amount of non-degradable material lost or disposed of at sea.

Summary

NOAA recognizes the important economic and ecological contribution Gulf states make to the Nation and many of the planned, expanded, and new programs will continue to support important work in Gulf states. Over the next decade, Federal, State, and local governments will make decisions about the use of coastal waters and their resources that will determine whether these economically and environmentally important areas, such as the Gulf of Mexico, will continue to be valuable national resources that provide important goods and services to the Nation.

As coastal issues become more complex and demanding, NOAA intends to play a greater role in the national effort to resolve the challenging issues confronting our coastal oceans. NOAA is committed to safeguarding the coastal ocean and its valuable resources and to keep them productive for future generations. NOAA has been very active in the Gulf of Mexico region and will continue to identify areas where it can help Gulf states address critical coastal problems. NOAA is proud to be a leader in the effort to preserve and enhance the resources of the Gulf of Mexico.

Mr. Chairman, this concludes my testimony. I will be happy to answer any questions the Subcommittee may have.

FOLLOW-UP QUESTIONS FOR DR. DONALD SCAVIA BEFORE THE SUBCOMMITTEE ON OCEANOGRAPHY, GULF OF MEXICO AND THE OUTER CONTINENTAL SHELF MERCHANT MARINE AND FISHERIES COMMITTEE HOUSE OF REPRESENTATIVES
APRIL 23, 1993

1. How do the Gulf of Mexico Program and the Regional Marine Research Program interact? What distinct functions do they serve?

The EPA's Gulf of Mexico Program spans a broad range of responsibilities for cleanup, management, and protection of ecosystems in the region. The Regional Marine Research Program in the Gulf of Mexico is required to develop a four-year research plan that addresses marine environmental research priorities in the region and undertake research to address those priorities. The Director of the Gulf of Mexico Regional Marine Research Board serves on the Technical Advisory Committee of the Gulf of Mexico Program, and the programs are routinely apprised of each other's plans and progress.

2. There has been a proliferation of initiatives, both from Congress and the previous Administration, to attempt to deal with the increasing environmental problems of our coastal waters. Do you feel the Sea Grant, regional marine research programs, the Coastal Ocean Program, and Coastal America are all necessary to address these problems? What roles do these programs play in the Gulf of Mexico and how do these initiatives interact with programs in the Gulf administered by other Federal agencies? What efforts are underway to better coordinate all these activities and reduce, rather then enhance, duplication?

NOAA's Sea Grant College Program, Coastal Ocean Program, and Regional Marine Research Program perform research roles in all U.S. coastal regions, including the Gulf of Mexico. Each program has different goals and objectives, and complements the others. The oldest of these programs, the National Sea Grant College Program established by Congress in 1966, has as its mandate applying the capabilities of America's universities to the enhancement of the coastal economy and the wise use of our marine resources. Sea Grant conducts research, education, and outreach programs in fisheries development, aquaculture, biotechnology, seafood processing, engineering and the economic and social sciences. Nationally, environmental programs in Sea Grant account for about 20 percent of Sea Grant's activities. The environmental programs of Sea Grant are focused on providing scientific understanding through research as the basis for informed environmental decisions at all levels of government through its marine advisory and communications programs.

In 1990, NOAA developed the Coastal Ocean Program to improve coastal environmental decision-making in three major areas: fisheries productivity; marine environmental quality; and coastal hazards. NOAA has several coastal environmental management, stewardship, and forecasting missions related to these areas, all of which rely on a strong scientific understanding of the marine environment. The Coastal Ocean Program is intended to provide that understanding, including the effective delivery of information to coastal decision-makers, through coordinated efforts of NOAA's research laboratories and program offices working in partnership with academic researchers and coastal resource managers. A National Academy Panel reviews program development and implementation efforts of the Coastal Ocean Program to ensure their quality and relevance to making environmental decisions. The activities of the Coastal Ocean Program provide critical support to NOAA's efforts to restore and manage the Nation's fisheries, restore degraded habitats, and improve public safety and reduce economic losses due to coastal flooding.

The Regional Marine Research Program was created by Congress in 1990. The focus of the Program is on environmental research on a regional scale, conducted primarily by universities and administered by semi-autonomous boards with limited Federal direction. Each region is expected to address the environmental issues of major importance to that region as determined by the regional boards. While there are NOAA and EPA representatives on each board, the program is not focused on the specific missions of the two Federal agencies.

There are several linkages that ensure that these three research programs will be coordinated within NOAA. Each regional board is headed by a Sea Grant director from that region. Other Sea Grant directors in the region are often ex-officio board members. NOAA and EPA each have two representatives on each board. At the Federal level, an Executive Committee of NOAA and EPA personnel is chaired by the Director of the Coastal Ocean Program Office. The Coastal Ocean Program accesses the university research community through the Sea Grant Program. Sea Grant is represented on the Coastal Ocean Program's Coastal Ocean Council. These and other linkages provide the mechanisms by which coordination is accomplished and duplication of effort avoided.

Each of these programs has established mechanisms for interacting with other Federal programs in the Gulf of Mexico. For example, the Coastal Ocean Program is conducting a major study of nutrient over-enrichment in the Mississippi/Atchafalaya River basin. The study has provided results from a nutrient model that are being used by EPA's Gulf of Mexico Program to evaluate potential nutrient control strategies for the area. Also through the Coastal Ocean Program, NOAA is leading an interagency effort through the Committee on Earth and Environmental Sciences to coordinate U.S. coastal ocean science activities among Federal agencies. Through its inventory of ongoing research in the region in developing its research plan, the Gulf of Mexico's Regional Marine Research Board will be able to incorporate other agencies' research plans into its identification of research gaps and priorities for the region. The Chair of the Gulf of Mexico Board also serves on the Technical Advisory Committee of EPA's Gulf of Mexico Program.

The Coastal America Program is an interagency effort which does not conduct marine research but leverages partner-agency funds to accelerate and accomplish value-added regional priority projects mainly in habitat restoration. Both the planning and implementation of projects under this program are conducted through close coordination among participating Federal and State agencies. As the oldest of these programs, Sea Grant has robust linkages to other programs. A prime example is the role that Sea Grant played in co-funding and hosting the recent Gulf of Mexico Symposium. Further, Sea Grant scientists are involved in many committees of the EPA Gulf of Mexico Program. Another example is the collaborative research on coastal processes being conducted by Sea Grant and the Corps of Engineers.

3. What percentage of NOAA's proposed FY 94 budget will be spent on activities which benefit the Gulf of Mexico? How does this compare to FY 93? How does this compare to funds spent on other regions of the country?

Many of NOAA's programs provide benefits for the Gulf of Mexico region. There are approximately $101 million for activities in the Gulf of Mexico in the FY 1994 budget request, compared with $102 million in FY 1993. These figures do not include individual grants, as the state-by-state breakdown will not be available until the end of the respective fiscal year. The following are approximate allocations of the NOAA budget by coastal regions:

	FY 1993 estimate ($ in millions)	FY 1994 estimate ($ in millions)
Gulf of Mexico	$ 102	$ 101
Atlantic	1,039	1,172
Pacific	186	238
Great Lakes	57	58
Chesapeake Bay	825	969

Notes:

The Chesapeake Bay and Atlantic regions contain funding allocations for NOAA administrative and headquarters offices located in Maryland.

States that border multiple coastal regions (i.e., Florida, New York, Maryland, and Virginia) are counted with each region that they border.

4. Is there any plan to expand the National Estuarine Research Reserve System into Texas? Is there any plan for additional National Marine Sanctuaries in the Gulf of Mexico? If so, at what stage in the designation process are prospective sites?

Currently, there are no plans to expand the NERR system into Texas. The process for designating an area as a National Estuarine Reserve must be initiated by a State, through the Governor's office, to the Secretary of Commerce. To date, we have not received any requests from Texas.

There are three proposed Gulf coast sites on the Site Evaluation List (SEL) for possible designation as National Marine Sanctuaries. The SEL is the working list of areas from which active candidates are selected for possible National Marine Sanctuary designation. The three sites are Big Bend Seagrass Beds (FL), Shoalwater Bay-Chandeleur Sound (LA) and Baffin Bay (TX). The underlying criteria currently used to include a site on the SEL and prioritize sites on the list are being assessed. Processing of the sites currently on the list, (including the three Gulf coast sites), has been suspended pending completion of the review of the selection criteria.

5. Title V of the Marine Protection, Research and Sanctuaries Act established a national program for coastal water quality monitoring. Please detail how this program is being implemented in the Gulf of Mexico, including coordination with existing efforts.

NOAA has developed an implementation plan for its new responsibilities under the National Coastal Monitoring Act (NCMA). The plan is coordinated closely with EPA and complements existing major coastal monitoring efforts, i.e., the NOAA National Status and Trends Program for Environmental Quality Measurements and the EPA Environmental Monitoring and Assessment Program for estuarine and near coastal waters. No funds are requested in the President's FY 1994 budget for NOAA to implement the NCMA. NOAA is currently reviewing organization-wide plans in this area that may include a request for funds for FY 1995. Those plans would include coastal water quality monitoring in the Gulf of Mexico.

6. Title IV of the Marine Protection, Research, and Sanctuaries Act established a national program to coordinate marine research on a regional level, including the Gulf of Mexico. The Administration has requested an increase in this program for FY 94 of $2.1 million. How extensive is federally-sponsored environmental research in the Gulf as compared to other regions? Non-federal? Has the Gulf region developed a research plan? If so, what are the research gaps? What is the cost of filling them?

NOAA has no available analysis on the extent of NOAA-, other Federal-, and non-Federal-sponsored research in individual regions of the U.S., including the Gulf of Mexico. However, NOAA estimates that total expenditures in the region are approximately $125 million, compared to estimates of $67 million in the Great Lakes and $22 million in the Chesapeake Bay. (Note that the Chesapeake Bay number excludes administrative functions not associated with normal State operations in Virginia and Maryland.) A significant portion of these expenditures would be associated with activities of NOAA's marine research missions conducted through NOAA programs, State agencies, and academic institutions in the Gulf of Mexico.

The Gulf region has developed a research plan which was just received by NOAA. NOAA has not yet had an opportunity to review the plan, which must be approved by NOAA and the Environmental Protection Agency.

7. Aquaculture has the potential for being one of the largest industries in the Gulf, given advances in farming shrimp, oysters, catfish, crayfish, redfish, and aquarium fish. What is the potential for employment opportunities represented by the aquaculture industry in the Gulf region? How much Federal support does this industry receive? Is there a downside to increased aquaculture activities in the Gulf?

NOAA estimates that 170,000 jobs could be created from aquaculture if full exploitation were undertaken in the Gulf of Mexico, representing an economic impact of $4.6 billion. This estimate includes development of production facilities associated with each of the 3000 oil platforms in the Gulf, use of offshore and near shore rearing pens, and use of on-shore ponds and other facilities. The Sea Grant Program now provides about $4 million nationwide annually in research and development support which is matched with $3 million from other sources. The National Marine Fisheries Service annually supports about $2 million in commercial aquaculture development nationwide. Aquaculture is an intensive activity that may have adverse environmental consequences and locally restrict other uses of the environment. Therefore full exploitation is unlikely to be realized, unless new technologies are developed to counteract the negative effects. NOAA is supporting such development as part of its aquaculture research and development.

8. Section 310 of the NOAA Authorization Act of 1992 directed NOAA to conduct a comprehensive economic study to provide baseline information to guide policy decision relating to the Gulf and South Atlantic shrimp fishery. What is the status of this study, due to Congress October 1 of this year?

Funding to carry out this study was not appropriated; consequently, the study was not done.

9. Under the Magnuson Act amendments of 1990, NOAA was directed to establish a three-year program to assess the impact on fishery bycatch by the shrimp trawl fishery. The results of this study are due in November of this year and are critical, as the bycatch exemption for shrimp trawl fishery expires January 1, 1994. Where is NOAA on this study and will the report be submitted to Congress in a timely manner? Who has been involved in the development of this study?

NMFS is currently heavily involved in activities to control bycatch in the Gulf shrimp fisheries, following redirection of research priorities and funds in the MARFIN and S-K grant programs, and special funding provided in FY 1992. Internal projects on conservation engineering and other bycatch research programs were expanded, and in conjunction with commercial fishery trade organizations, regional researchers and managers, recreational fishermen, conservationists, and the Gulf and South Atlantic Fisheries Development Foundation, NMFS developed and implemented the Southeast Region Shrimp Trawl Bycatch Program to plan, coordinate and monitor bycatch priorities and activities. The focus of research has been on determining the status of overfished non-target stocks being impacted by shrimp trawl activities, the magnitude of fishing mortality and effort by sources other than shrimp trawl fishing, and the status of gear development and alternative fishing methods. Preliminary research findings will be presented to the Gulf of Mexico Fishery Management Council in December 1993.

To date, more than 50 different bycatch reduction devices have been tested by NMFS, and several of these appear promising candidates for effective use in reducing Gulf of Mexico finfish bycatch with little or no shrimp loss. The Department recently released the results of these studies in "Status Report on the Potential of Gear Modifications to Reduce Finfish Bycatch in Shrimp Trawls in the Southeastern United States, 1990-1992."

10. You mentioned the fact that NMFS has been able to relax TED usage off North Carolina due to observations that turtles tend to position themselves along temperature fronts in the Gulf Stream. When the Gulf Stream moves offshore, the northern portion of the North Carolina shelf has had the TED requirement moved. This is the result of extensive study done in the area by the NMFS lab in Beaufort, North Carolina. Do oceanographic conditions exist in the Gulf of Mexico which could allow this same type of adaptive regulation? Are similar studies being conducted for the Gulf? If so, are additional findings available? What further effort is needed?

The use of CoastWatch to assist in assessing the risk to turtles of not requiring TEDS during the summer flounder fishery off North Carolina was based on the expected presence (or absence) of sea turtles and water temperature measured in near real-time from satellites. The research in North Carolina was done during the winter months when large temperature gradients were present. Such thermal gradients do not exist during the summer months. Since the relationship between turtles' movement and sea surface temperature, as well as the sea surface temperature patterns, will vary among coastal regions, direct application of this technology to other areas requires further analyses. Preliminary studies are underway in the Gulf of Mexico. Additional findings are not available and more intensive effort would be required to fully evaluate potential applications.

ORAL STATEMENT

OF

JAMES R. HANCHEY
DIRECTOR OF PLANNING,LOWER MISSISSIPPI VALLEY DIVISION
U. S. ARMY CORPS OF ENGINEERS

BEFORE THE

SUBCOMMITTEE ON OCEANOGRAPHY, GULF OF MEXICO
AND THE OUTER CONTINENTAL SHELF
COMMITTEE ON MERCHANT MARINE AND FISHERIES
UNITED STATES HOUSE OF REPRESENTATIVES

ON

FEDERAL ACTIVITIES
RELATED TO
PROTECTION OF THE GULF OF MEXICO ENVIRONMENT

CORPUS CHRISTI, TEXAS
23 APRIL 1993

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

I AM HONORED TO BE TESTIFYING BEFORE YOU TODAY ON THE U.S. ARMY CORPS OF ENGINEERS ACTIVITIES DESIGNED TO PRESERVE AND IMPROVE THE GULF OF MEXICO ENVIRONMENT. ACCOMPANYING ME TODAY ARE MR. DENNIS BARNETT, FROM THE CORPS SOUTH ATLANTIC DIVISION OFFICE AND MR. SID TANNER FROM OUR GALVESTON DISTRICT.

MY STATEMENT WILL FOCUS ON OUR CURRENT MISSION IN THE GULF REGION, HOW IT COMPARES TO OUR MISSIONS IN OTHER PARTS OF THE COUNTRY, AND THE ROLE THAT THE GULF REGION PLAYS IN NATIONAL PROGRAMS ADMINISTERED BY THE CORPS.

OUR PROJECT-RELATED ACTIVITIES OF PLANNING, CONSTRUCTION, AND MAINTENANCE ARE CARRIED OUT TO IMPLEMENT OUR AUTHORITIES FOR NAVIGATION, FLOOD DAMAGE REDUCTION, AND RELATED PURPOSES. OUR BUDGET AUTHORITY FOR THESE ACTIVITIES IN THE GULF STATES FOR FISCAL YEAR 1993 INCLUDES $29 MILLION FOR 34 PLANNING STUDIES, $350 MILLION FOR CONSTRUCTION OF 45 PROJECTS, AND $433 MILLION FOR OPERATION & MAINTENANCE OF 120 PROJECTS. THE STUDIES WILL BE CONDUCTED IN CONFORMANCE WITH NATIONAL GUIDELINES AND THE FEDERAL OBJECTIVE OF PROJECT PLANNING, WHICH IS TO CONTRIBUTE TO NATIONAL ECONOMIC DEVELOPMENT CONSISTENT WITH PROTECTING THE NATION'S ENVIRONMENT.

TODAY AS IN THE PAST, OUR COASTAL PORTS AND CHANNELS REQUIRE MAINTENANCE DREDGING, AND PLACEMENT OF THIS DREDGED MATERIAL IS A MAJOR ENVIRONMENTAL CHALLENGE. OUR OPTIONS INCLUDE PLACEMENT IN ESTUARINE OPEN WATERS, DESIGNATED OCEAN SITES, DIKED UPLAND SITES, SHALLOW WATER "MARSH ESTABLISHMENT" AREAS, BEACH NOURISHMENT AREAS, AND VARIOUS COMBINATIONS THEREOF. ALL PLACEMENT OPTIONS ARE COORDINATED WITH RESOURCE AGENCIES AND THE GENERAL PUBLIC, AND SPECIFIC STEPS ARE TAKEN TO COMPLY WITH

APPLICABLE ENVIRONMENTAL LAWS AND REGULATIONS.

OUR AGENCY VIEWS DREDGED MATERIAL AS A RESOURCE - NOT A WASTE MATERIAL. WE SEEK OPPORTUNITIES FOR BENEFICIAL USES OF DREDGED MATERIALS, AND HAVE FOUND THAT WE CAN MAINTAIN NAVIGATION CHANNELS AND CONCURRENTLY PRODUCE ENVIRONMENTAL BENEFITS. ONE SPECIFIC EXAMPLE IS GAILLARD ISLAND, ALABAMA, WHICH WAS CREATED FROM DREDGED MATERIAL AND PROVIDES NESTING HABITAT FOR THOUSANDS OF COLONIAL SEABIRDS. OTHER EXAMPLES TYPICAL OF BENEFICIAL USE INCLUDE NOURISHMENT OF BEACHES, AND PROTECTION OF HISTORIC PROPERTIES.

THE CORPS REGULATORY PROGRAM RESPONSIBILITY INCLUDES AUTHORITY TO REGULATE DREDGING, STRUCTURES, AND OTHER TYPES OF WORK IN NAVIGABLE WATERS, THE DISCHARGE OF DREDGED OR FILL MATERIAL INTO U.S. WATERS, AND THE TRANSPORT OF DREDGED MATERIAL FOR THE PURPOSE OF OCEAN DISPOSAL. OUR REGULATORY ACTIONS ARE SUBJECTED TO A FULL PUBLIC INTEREST REVIEW, WITH FULL INVOLVEMENT OF FEDERAL AND STATE RESOURCE AGENCIES. WE STRIVE THROUGH THE PERMIT PROCESS TO INSURE THAT IMPACTS TO [redacted] WETLAND

RESOURCES ARE AVOIDED, OR MINIMIZED, AND THAT UNAVOIDABLE IMPACTS ARE ADEQUATELY MITIGATED. WE ARE STRONGLY COMMITTED TO SEEKING INNOVATIVE WAYS TO STREAMLINE THE PERMIT PROCESS. EXAMPLES INCLUDE MITIGATION "BANKS," SPECIAL AREA MANAGEMENT PLANS, AND OTHER SIMILAR APPROACHES. CONSISTENT WITH NAVIGATION~~AL~~ SAFETY REQUIREMENTS, WE HAVE PERMITTED NUMEROUS ARTIFICIAL REEFS ~~SITES~~ OFF THE COAST OF THE GULF STATES WHERE SITES HAVE POTENTIAL FOR DEVELOPING OR ENHANCING FISHERY RESOURCES. ONE MITIGATION BANK HAS BEEN ESTABLISHED IN LOUISIANA, AND SEVERAL PROPOSALS BY PRIVATE INTERESTS IN THAT STATE ARE BEING FORMULATED.

THE CORPS HAS MANY RESEARCH AND DEVELOPMENT ACTIVITIES UNDERWAY WHICH ARE APPLICABLE TO PROTECTION OF THE GULF ENVIRONMENT. FOR EXAMPLE, WE ARE EVALUATING THE EFFECTIVENESS OF WETLAND RESTORATION TECHNIQUES SUCH AS RIVER SIPHON SYSTEMS, RIVER SPLAYS, UNCONFINED DREDGED MATERIAL PLACEMENT, AND MARSH MANAGEMENT STRUCTURES. WE ARE ENGAGED IN LONG-TERM DATA COLLECTION FOR USE IN COMPARING MANMADE SALT MARSHES TO NATURAL MARSHES. WE

ARE PLACING DREDGED MATERIAL IN A THIN LAYER ADJACENT TO THE GULFPORT HARBOR NAVIGATION CHANNEL AS PART OF A DEMONSTRATION PROJECT TO STUDY THE EFFECTIVENESS OF SUCH PLACEMENT AS A MANAGEMENT TECHNIQUE FOR ENVIRONMENTAL PROTECTION . WE ARE MONITORING AND EVALUATING SALT MARSH ESTABLISHMENT SITES AND INVESTIGATING BENTHOS RECOVERY FOLLOWING DREDGED MATERIAL PLACEMENT, EVALUATING THE COMBINED INFLUENCE OF SHORELINE PROTECTION AND WETLAND RESTORATION PLANTINGS ON EXISTING WETLANDS AND WILDLIFE, AND FINANCIALLY SUPPORTING THE NATIONAL MARINE FISHERIES SERVICE IN A SEA TURTLE TAGGING AND TRACKING STUDY TO ASSESS POTENTIAL IMPACTS OF HOPPER DREDGE OPERATIONS.

WE ARE ONE OF FIVE FEDERAL AGENCIES PARTICIPATING IN A TASK FORCE EFFORT TO ADDRESS THE CRITICAL LOSS OF COASTAL WETLAND RESOURCES IN LOUISIANA. WE WILL BE THE LEAD AGENCY FOR SIX WETLAND RESTORATION PROJECTS, WHICH ARE APPROVED FOR CONSTRUCTION AND WHICH WILL PROTECT NEARLY 5,000 ACRES OF EXISTING MARSH WHILE CREATING OVER 11,000 ACRES OF NEW MARSH.

UNDER THE NATIONAL ESTUARY PROGRAM , THE CORPS HAS A

PARTNERSHIP ROLE IN THE FIVE DESIGNATED SITES IN THE GULF AREA. OUR DISTRICTS HAVE BEEN ACTIVE PARTICIPANTS IN THE MANAGEMENT AND TECHNICAL COMMITTEE ACTIVITIES ASSOCIATED WITH THESE SITES.

THE CORPS IS AN ACTIVE PARTICIPANT IN THE FEDERAL/STATE GULF OF MEXICO PROGRAM, UNDER THE LEAD OF THE U.S. EPA. THE OBJECTIVE OF THE PROGRAM IS TO HELP SUSTAIN THE ECONOMIC DEVELOPMENT OF THE GULF REGION WHILE PROTECTING ENVIRONMENTAL QUALITY. OUR COASTAL DISTRICTS AND DIVISIONS ARE PROVIDING SUPPORT AND LEADERSHIP IN FORMULATING POLICY, MANAGING PROGRAM ACTIVITIES, AND MAKING AVAILABLE, TO THE GULF OF MEXICO PROGRAM OFFICE, THE TECHNICAL EXPERTISE AND STAFF SUPPORT NEEDED TO MAINTAIN AN EFFECTIVE AND SUCCESSFUL PROGRAM.

ANOTHER IMPORTANT EFFORT IN WHICH THE CORPS IS INVOLVED IS THE COASTAL AMERICA INITIATIVE, ESTABLISHED IN 1991, TO ADDRESS THE PRIMARY COASTAL ENVIRONMENT CONCERNS OF HABITAT LOSS AND DEGRADATION, NON-POINT SOURCE POLLUTION, AND CONTAMINATED SEDIMENTS. OUR COASTAL DISTRICTS ARE CONDUCTING THEIR PLANNING AND PROJECT

ACTIVITIES WITH A VIEW TO IDENTIFYING, DEVELOPING, AND IMPLEMENTING COASTAL PROJECTS THAT MEET THE COASTAL AMERICA CRITERIA. OUR AGENCY WILL HAVE THE LEAD ON SEVEN COASTAL AMERICA PROJECTS AS WELL AS A SUPPORTING ROLE IN THIRTEEN OTHERS.

THE CORPS MISSIONS IN THE GULF REGION ARE ESSENTIALLY THE SAME AS OUR MISSIONS IN THE OTHER COASTAL REGIONS OF THE UNITED STATES. AS I MENTIONED EARLIER, OUR CIVIL WORKS PROGRAM FOR FISCAL YEAR 1993 INCLUDES $812 MILLION FOR CARRYING OUT OUR AGENCY MISSION IN THE GULF REGION. THIS TOTAL COMPARES TO TOTALS OF $614 MILLION FOR STATES BORDERING ON THE ATLANTIC OCEAN, $543 MILLION FOR STATES BORDERING ON THE PACIFIC OCEAN, AND $688 MILLION FOR STATES BORDERING ON THE GREAT LAKES.

IN SUMMARY, THE GULF REGION HAS A HIGH PRIORITY WITHIN THE CORPS OF ENGINEERS. WE STAND COMMITTED TO CONTINUING OUR STRONG PARTNERSHIP WITH OTHER FEDERAL AGENCIES, STATES AND LOCAL GOVERNMENTS, AND THE CITIZENS OF THE REGION - TO BOTH CONDUCT OUR TRADITIONAL MISSIONS OF NAVIGATION AND FLOOD CONTROL AND TO ACTIVELY PARTICIPATE

IN GULF-WIDE PROGRAMS THAT CONTRIBUTE TO PROTECTION OF THE GULF ENVIRONMENT.

MR. CHAIRMAN, THIS CONCLUDES MY STATEMENT.

TESTIMONY OF CONRAD FJETLAND, ASSISTANT REGIONAL DIRECTOR FOR FISHERIES AND FEDERAL AID, REGION 2, U.S. FISH AND WILDLIFE SERVICE, DEPARTMENT OF THE INTERIOR, BEFORE THE SUBCOMMITTEE ON OCEANOGRAPHY, GULF OF MEXICO, AND OUTER CONTINENTAL SHELF, U.S. HOUSE OF REPRESENTATIVES, CONCERNING THE FEDERAL ROLE IN RESTORATION OF THE GULF OF MEXICO

April 23, 1993
Corpus Christi, Texas

Thank you, Mr. Chairman, for inviting the U.S. Fish and Wildlife Service to testify at this hearing on the Gulf of Mexico. My name is Conrad Fjetland and I am the Service's Assistant Regional Director for Fisheries and Federal Aid in our Albuquerque Regional Office. For the past year, I have been serving as regional Coastal Coordinator in Austin, Texas. In this capacity I have gained firsthand knowledge of the complex environmental issues facing the Gulf of Mexico and the Service's role in addressing those issues. My purpose here today is to present to you the Service's perspective on the health and well-being of the Gulf's resources and our programs which help preserve those resources for future generations.

The Gulf of Mexico is truly blessed with an abundance and diversity of natural resources. The Gulf region contains about 50 percent of the total wetland area of the conterminous United States. Some of the most valuable waterfowl habitat in the United States is found in the Gulf marshes. The Gulf accounts for 40 percent of the domestic seafood produced by this nation, and 98 percent of the Gulf's commercial fish and shellfish rely on the Gulf's estuaries for at least part of their life cycle. The Gulf of Mexico beach resort and recreation industry generates about $20 billion per year in revenue. About one-third of the Nation's marine recreational fishing occurs in the Gulf of Mexico. These industries flourish thanks to the Gulf's bountiful resources.

In addition, about 90 percent of U.S. and Mexican oil produced offshore is from oil wells in the Gulf of Mexico. Also, 63 percent of all crude oil imported into the United States comes through Gulf waters. Six of the Nation's top 10 crude oil handling ports are in Texas and Louisiana. There are over 15,000 miles of pipeline in the Gulf of Mexico's Outer Continental Shelf. About 45 percent of the domestic import/export tonnage of the United States passes through Gulf of Mexico ports. In addition, 75 percent of the lower 48 States landmass drains into the Gulf of Mexico. Finally, the Gulf region is one of the fastest growing regions of the nation, bringing more and more people to the Gulf who expect to enjoy the rich natural resources of the area.

Competing pressures have resulted in a deterioration of many of the resource values we all cherish. For example, 57 percent of the shellfish growing areas along the Gulf have been closed permanently or conditionally because of human health concerns. Over 3,000 square miles of the bottom waters in the Gulf off Texas and Louisiana are known as the "dead zone" because of excessive oxygen depletion. Massive wetlands losses have been documented in the Gulf coastal States; in Louisiana 500,000 acres have been lost since the 1950s, and in Florida 237,000 acres have disappeared since the 1970s.

Texas and Louisiana accounted for 68 percent of all oil spill notifications (8,639) in the U.S. between 1972 and 1989. Pipeline accidents alone resulted in 20 million gallons of oil spilled into U.S. Gulf of Mexico waters. In Galveston Bay, 95 percent of submerged grasses have been lost. Submerged grasses are also declining in Laguna Madre, due in part to light reduction in the water from maintenance dredging activities, local channel creation and contaminated storm water run-off.

As one of the stewards of America's fish and wildlife resources, it is the mission of the U.S. Fish and Wildlife Service to provide leadership in achieving a national net gain of fish and wildlife and the natural systems which support them. Secretary Babbitt is committed to a closer working relationship with other agencies, and there is no better showcase for this commitment than here in the Gulf of Mexico, where the Service is working closely with the Environmental Protection Agency and others to address the environmental challenges facing the Gulf. The Service was the first agency to sign the Gulf of Mexico Program Partnership for Action, as a first step in leveraging our resources with those of others to meet those challenges. Our long-term goal is to do our part to ensure that America's sea is kept shining for present and future generations.

The Service's commitment to the fish and wildlife resources of the Gulf of Mexico is evidenced by the substantial investment of resources we already have in the area. The Service is a major landholder and manager in the Gulf region with 44 national wildlife refuges along the Gulf coast comprising nearly 1,000,000 acres. The Service's fisheries program is involved in a major effort to restore anadromous fisheries in Gulf rivers and streams, with special emphasis on the Gulf sturgeon and striped bass. The Service has Ecological Services Field Offices throughout the Gulf States, concentrating on wetlands conservation, endangered species, and environmental contaminants.

Through the National Wetlands Research Center in Lafayette, Louisiana and several field stations throughout the Gulf States, the Service has assembled an impressive research program in wetlands ecology, migratory birds, spatial analysis, and environmental contaminants. The National Wetland Inventory, based in St. Petersburg, Florida, provides wetlands mapping services and analyses of wetlands status and trends. A comprehensive inventory of Texas coastal wetlands is currently underway.

Through our Federal Aid program, we administer $18 million annually in wildlife restoration funds and $23 million annually in sport fish restoration funds for the five Gulf States. The Service also administers the Coastal Wetlands Conservation Grants program, and the Service is a strong partner in wetlands restoration efforts in

Louisiana as a result of the Coastal Wetlands Planning, Protection and Restoration Act.

The Service's Bay/Estuary Program concentrates on coastal resource protection and restoration through interagency partnerships. The program is established in nine critical coastal watersheds around the country, one of which is Galveston Bay. Two additional programs will start in Fiscal Year 1994 -- one involving both Matagorda Bay and the Corpus Christi area, and the other in Barataria and Terrebonne Bays in Louisiana.

The Service recognizes the need for strong interagency cooperation in addressing Gulf issues. We have been a major partner in the Gulf's Coastal America program and have seen that program become the most successful Coastal America program in the Nation. The Service has assigned a full time representative in the Gulf of Mexico Program office at the Stennis Space Center, Mississippi, and actively participates in the Gulf of Mexico Program through membership on the Policy Review Board, Management Committee, and various technical committees and working groups.

Through these programs, the U.S. Fish and Wildlife Service has made a good start toward meeting the environmental challenges of the Gulf region. As evidenced by our endorsement of the Gulf of Mexico Partnership for Action document, we share in the common goal "to protect, restore, and enhance the coastal and marine waters of the

Gulf of Mexico and its coastal natural habitats, to sustain living resources, to protect human health and the food supply, and to ensure the recreational use of Gulf shores, beaches, and waters ... in ways consistent with the economic well being of the region."

Again, Mr. Chairman, thank you for the opportunity to present the U.S. Fish and Wildlife Service's role in the Gulf of Mexico region. I will be happy to answer any questions you may have.

Testimony of

J. Rogers Pearcy
Regional Director, Gulf of Mexico
Department of the Interior
Minerals Management Service

Before the Merchant Marine and Fisheries Committee
Subcommittee on Oceanography, Gulf of Mexico,
and Outer Continental Shelf
U.S. House of Representatives

April 23, 1993

Mr. Chairman and members of the subcommittee, I am pleased to have this opportunity to testify before you on the research and special programs that the Minerals Management Service (MMS) is conducting in the Gulf of Mexico (GOM) Region.

My testimony will describe some of our environmental studies, oil-spill research, and outreach and education activities directed at the Gulf Region. I will also mention the MMS cooperation and coordination efforts with other Federal agencies, Gulf Coast States and universities in regard to these activities.

As background to my testimony, a few words are appropriate first on the role and mission of MMS as well as our role in the GOM Region relative to the other MMS regions and the national program. The MMS is the primary Federal agency responsible for ensuring that all aspects of oil, gas, and sulfur leasing, exploration, development, production and abandonment activities on the OCS are conducted in a safe and clean manner. Safety, environmental protection, and conservation of resources are our highest priorities and every reasonable precaution is taken to minimize the risk of human injury, oil spills, and environmental degradation from operational discharges.

The OCS program has been in existence since 1954 and has made many important contributions to the Nation from both an energy and economic standpoint. Since inception of the program, the OCS has produced approximately 9.2 billion barrels of oil and over 100 trillion cubic feet of natural gas. In addition, revenues paid to the Federal Treasury from OCS development have totalled over $100 billion. Of this total, over $82 billion has gone into the general fund, $13 billion has gone into the Land and Water Conservation Fund and over $2 billion has gone to the Historic Preservation Fund. Also, over $2 billion has gone directly to coastal States where offshore activities occur 3-6 miles off their coast.

The OCS produces approximately 1/4th of our Nation's domestic gas and 1/8th of its domestic oil. The minerals produced by the OCS program contribute important resources needed to increase economic growth, to provide productive jobs, and to help minimize imports. Because of these reasons, we believe the program can play an important role towards meeting the Administration's goals of increased reliance on natural gas, job creation, increased domestic investment and deficit reduction. Through various research and cooperative efforts, such as those discussed below for the GOM, MMS is better able to achieve these goals.

The GOM region is very important to the national OCS program. Of the 18 lease sales proposed in the current OCS 5-Year Program, 10 of these are proposed for the Central and Western GOM area. Also, because the GOM is the most mature area and the majority of oil and gas production occurs there, it is the primary focus of MMS research, regulation and monitoring efforts.

Environmental Studies

Approximately $103 million have been spent on environmental and socioeconomic studies in the GOM from the inception of the Environmental Studies Program in 1973 through Fiscal Year (FY) 1992.

The shifting emphasis to increased funding of studies in the GOM during the last 5 years ($37.55 million) is a direct response to the need identified by the National Academy of Sciences and other review and advisory groups for a better understanding of the long-term, chronic environmental impacts associated with offshore gas and oil development and production activities.

In the current fiscal year, approximately $9.1 million of the MMS Environmental Studies Program budget of $19.4 million will be directed to GOM studies. We have been emphasizing working cooperatively with State institutions and other Federal agencies. I would like to highlight for you some of these ongoing and new studies initiatives.

MMS is funding an extensive physical oceanography study involving three integrated components - Louisiana/Texas Shelf Circulation and Transport Processes Program (LATEX-A), Mississippi River Plume Hydrographic Study (LATEX-B), and GOM Eddy Circulation Study (LATEX-C). The LATEX-A component is being conducted by Texas A&M University, LATEX-B by Louisiana State University, and LATEX-C by Science Applications International Corporation. The findings of this study will be used in oil-spill modeling, oil-spill contingency plans, and other environmental assessments for sales, exploration, and development in the northwestern GOM.

An ocean circulation modeling study is being conducted for the GOM which will provide reliable ocean current information for environmental assessments. The resultant model will simulate the ocean currents caused by winds, heating and cooling, river runoff, tides, and other processes. The results, validated by rigorous comparison with observations, will provide improved simulations of the flow fields for studying the paths of drifting particles such as oil. This multi-year project includes an Inter-Agency agreement with the Navy, through the Naval Research Laboratory at the Stennis Space Flight Center in Mississippi, providing for participation of Navy scientists in the modeling effort.

A related field study sponsored by the MMS is being performed by Dynalysis of Princeton in the northwestern GOM. The purpose of that study is to verify numerical circulation models as well as to directly characterize the ocean's variability to better forecast oil-spill transport. In this study, over 400 ocean-surface, satellite-tracked drifters will be deployed in 18 consecutive air deployments over a 16-month period at 12 repeated locations. In addition, 62 drifters will be deployed from three offshore platform sites over a 1-year period. The drifter data, in addition to their description of the surface flow field, will be used to develop techniques cooperatively with the MMS for direct use in oil-spill trajectory analysis.

A monitoring experiment (GOOMEX), conducted by Texas A&M University, is underway to study the effects of offshore development and production activities in the northwest GOM. This study will provide information important to resolving the most significant unanswered questions concerning the long-term, chronic low-level effects of offshore gas and oil development and production on the marine environment. The MMS will use results of this study in developing lease stipulations and in evaluating plans of exploration and development.

MMS is sponsoring a study of the chemosynthetic communities on the GOM continental slope, also being conducted by Texas A&M University. Information obtained through this study will be used in the permitting of offshore gas and oil operations and in the development of mitigating measures to protect these unusual communities found in areas of natural seeps of gas and oil.

A Flower Garden Banks monitoring study will be conducted in cooperation with NOAA's National Marine Sanctuary Program to continue an MMS program of monitoring the environmental conditions at the East and West Flower Garden submarine banks. Information provided by this study will be used by MMS analysts to evaluate the adequacy of current lease stipulations that are designed to protect the biological resources of the Flower Garden Banks.

The Flower Garden Banks, located offshore Texas, are comprised of two unique and sensitive coral reefs in the Northern GOM. Since 1978, the Department of the Interior (DOI), through MMS and its predecessor, has promulgated special regulatory measures to protect these Banks from the effects of OCS hydrocarbon development in the area. These measures were developed in full cooperation with the National Oceanic and Atmospheric Administration (NOAA) and other Federal agencies. They include the establishment of "no activity zones" to prohibit hydrocarbon activities directly over the Banks, and 2- and 4-mile "buffer zones" to restrict hydrocarbon activities in the vicinity of the Banks.

On January 17, 1992, the Flower Garden Banks National Marine Sanctuary located about 120 miles off the Texas coast. Recognizing the effectiveness of the MMS protective measures, NOAA incorporated them into the regulatory scheme for the sanctuary. As a sanctuary, the coral reefs at the Flower Garden Banks will be protected permanently from anchoring, dredging, hydrocarbon development, and other activities that may cause destruction of the fragile reef communities.

MMS is funding studies being conducted by the National Marine Fisheries Service (NMFS) and Texas A&M University on the movements and distribution of marine mammals in the GOM and a study being done by NMFS on sea turtle behavior relative to offshore structures in the western and central GOM. Under the Marine Mammal Protection Act, and the Endangered Species Act, the MMS must ensure that activities it approves will not jeopardize the continued existence of protected species or destroy or adversely modify critical habitats. These studies will provide information on marine mammals and turtles needed for environmental impact statement (EIS) preparation; evaluation of industry plans for exploration, development, and transportation; and for decisions concerning platform removal operations.

A study of platform-associated fisheries resources was initiated in FY 1992 as an Inter-Agency Agreement between MMS and NMFS. The MMS will use information provided by this study in EIS preparation and in development of mitigating measures related to platform removal operations.

The Clean Air Act Amendments of 1990 transferred jurisdiction over air emissions on the OCS from the DOI to the Environmental Protection Agency (EPA) for all OCS areas, except the Central and Western GOM. To understand better the meteorological dynamics of the GOM, a contract in the amount of $5.5 million was awarded by the MMS to Systems Applications Incorporated in February 1992 for a GOM Air Quality Study. The objective of the study is to assess impacts from OCS activities in the Gulf on ozone nonattainment areas in Texas and Louisiana. As part of this study a monitoring program is planned for the summer of 1993 to collect additional meteorological and air quality data. Also a comprehensive inventory of air emissions is being performed; this includes emissions from production platforms, support vessels, tankers, and helicopters. The entire study is expected to take about 3 years to complete. The MMS is working cooperatively on this study with the EPA, the States of Texas and Louisiana, and the offshore industry. This study will provide valuable information on the effects of OCS gas and oil activities on air quality.

Investigations are ongoing by the Louisiana Universities Marine Consortium (LUMCON) through the MMS' University Research Initiative (URI) to study the long-term effects of gas and oil production activities. Louisiana State University, the University of Southwestern Louisiana, and the University of New Orleans are LUMCON members conducting URI projects. Fiscal Year 1993 represents the fifth and final year of funding of the initial term for this initiative. Research funded during this term will be completed during FY 1994. The URI has been successful in achieving the goal of increasing the involvement of faculty and students in research on offshore gas- and oil-related issues.

Studies are also being conducted through the Coastal Marine Institute (CMI) initiative at Louisiana State University, a cooperative venture initiated in FY 1992 by the MMS and the State of Louisiana. While Louisiana State University has the lead role, the University of New Orleans and the University of Southwestern Louisiana will also conduct research through the CMI. These studies are focused on environmental and socioeconomic aspects of OCS gas and oil and marine mineral development activities. The CMI program emphasizes building partnerships with State institutions and sharing costs for OCS-related research. In recognition of the mutual benefits of the research, matching funds are a prerequisite for such partnerships. The CMI with the State of Louisiana was signed in September 1992 and includes one-to-one matching funds (up to $2 million/year each from the MMS and Louisiana) over a 5-year period.

MMS will be expanding its program on social and economic issues in the GOM. As recommended in a recent review by the National Research Council on our Environmental Studies Program, we are now working with our Scientific Committee to develop a national agenda for efficiently addressing social and economic issues. This effort will include convening national experts at a workshop later this year at the University of New Orleans. Based on a previous socioeconomics workshop we held for the GOM, we plan to go forward with studies to better identify the issues specific to individual states and organize the information available throughout the Gulf states into an organized baseline that can be used to assess the historical, social, and economic effects (both good and bad) of the oil and gas industry in GOM communities. In addition, our CMI with the State of Louisiana will include socioeconomic studies on issues important to Louisiana and MMS.

The MMS has entered into a cooperative agreement with the Department of Energy to cosponsor a study of operational discharges and effluent discharge regulations in the GOM. This study is monitoring trace metals, low-level naturally occurring radioactive materials, and petroleum hydrocarbons that are present in offshore operational discharges and is also assessing the potential environmental and human health effects.

Oil-Spill Research

In 1986, a major oil spill in the Republic of Panama polluted Caribbean coastal environments, including a long-term monitoring site and a number of short-term study sites investigated by the staff of the Smithsonian Tropical Research Institute (STRI), Republic of Panama. The MMS contracted with STRI to conduct the U.S. National Museum Oil-Spill Recovery Study because this spill offered a unique opportunity to assess the biological effects of a major oil spill in the Caribbean region. The purposes of this study are to monitor long-term changes that may result from the spill in the distribution and abundance of marine organisms and to understand the ecological processes causing any observed changes.

The objective of another study, the Oil and Oil Dispersants Toxicity Program conducted by Continental Shelf Associates, Inc., is to collect data on the toxicity of dispersed oil to selected GOM marine species, particularly the eggs and larvae of a few important commercial and recreational fisheries species in the north-central GOM. The MMS will use the findings of this study in the preparation of EIS's and for review of oil-spill contingency plans submitted by industry with their plans of exploration, development and production.

The MMS is planning workshops to be conducted by McNeese State University of Lake Charles, Louisiana, for oil-spill remediation for habitats and resources in the GOM. These workshops will pertain to the offshore reaches of the GOM. The participants will identify habitats and resources of concern in the GOM, develop remediation approaches, and recommend needed research. The results of these workshops may serve to focus future research efforts.

The MMS is conducting oil-spill research in other areas that will have important applications to activities in the GOM. For example, in the mid-1980's, the MMS expanded its safety and pollution prevention research to include oil-spill response, and with the Canadian department of the environment (Environment Canada) embarked on a comprehensive spill detection and response program. The program is completing the development of remote slick identification and thickness sensors, and of on-scene oil typing instruments. In addition, chemical treating Agents, including more effective dispersants, are being developed. The highest priorities for the MMS are quantification of the physics of burning slicks on the surface of the ocean and measurement of the fates and effects of the products of combustion. These experiments have been conducted in the laboratory but not on a large field scale. Confirmatory open-ocean burn experiments are scheduled for August 1993 off Newfoundland, where several ships and aircraft will conduct tests of burning oil in deployed collection booms. To date, the MMS data reveal that the products of combustion are no more toxic than the unburned vapors from a slick.

The MMS operates the Oil and Hazardous Materials Simulated Environmental Test Tank (OHMSETT), located on Sandy Hook in New Jersey, under a private contract, having supplemental funding from Environment Canada and the U.S. Coast Guard. OHMSETT, a two football-field long, open air water basin, where oil can be deployed and collected in various sea conditions, provides environmentally secure means for testing booms, skimmers, and remote sensing equipment under controlled conditions in a standardized manner. OHMSETT is available to all prospective users, United States and foreign.

Outreach and Education

Since 1985, the MMS regional office in New Orleans has played an active leadership role in developing and implementing solutions to the marine debris issue in the GOM. Specific highlights include: special notices to offshore operators on marine trash and debris; marine debris sessions at several Information Transfer Meetings; several professional papers and numerous public speeches on marine debris in the GOM; and a "Take Pride Gulf-Wide Task Force" in direct response to the marine debris issue.

The MMS organized the first regional beach cleanup and was first to adopt a Louisiana beach, which led to establishment of a Louisiana Beach Adoption Program. The MMS employees have adopted three GOM beaches and successfully encouraged the gas and oil industry to participate in beach cleanup and adoption programs. Through the Environmental Studies Program, the MMS supported continued marine debris monitoring at Mustang Island, Texas, which included an evaluation of the initial effects of MARPOL, Annex V. The MMS served as Federal co-chair of the Marine Debris Subcommittee of the GOM Program. Through this program, the MMS made major contributions to the development and implementation of a GOM Marine Debris Action Plan.

The MMS played a key leadership role in developing and implementing a regional "Boater's and Fishermen's Pledge Program." And, the MMS is working directly with the gas and oil industry through its Offshore Operators Committee to seek improvement and community understanding of offshore waste handling and management practices.

Through its innovative Rigs-to-Reefs Program, the MMS has brought regional and national attention and understanding to the value of gas and oil structures to fish and fishing. As a consequence, the States of Louisiana and Texas have established offshore artificial reef programs designed to recycle obsolete gas and oil structures as productive fishing and diving sites. To date, approximately 40 structures have been converted to permanent reefs.

Actions taken by the MMS supporting the development of Rigs-to-Reefs projects and programs include: an Inter-Agency Agreement with the NMFS to survey recreational fishing in association with offshore platforms; a synopsis of offshore fishing data gathered by industry on the scope and extent of fishing around gas and oil production platforms off the coast of Louisiana; special sessions on Rigs-to-Reefs at several MMS Information Transfer Meetings; participated in regional, national, and international conferences and meetings focusing on artificial reefs and Rigs-to-Reefs; advice to the States of Louisiana and Texas in the planning, development, and implementation of their Rigs-to-Reef programs; information, advice, and assistance to industry, environmental groups, and others interested in the use and conversion of gas and oil structures as artificial reefs; cooperative development and publication of an informational brochure on the location of GOM artificial reefs; and a recreational fishing map series designed to inform the public of fishing opportunities and safety precautions associated with fishing in areas with active gas and oil operations.

A vigorous exhibit program has been developed which emphasizes both the regulatory aspects and the environmental studies of the Gulf Region. Specialized exhibits (Endangered and Threatened Species, Science in the Sea, Benthic Studies in the Gulf) have been developed and are prominently displayed at a wide variety of professional and scientific meetings, public hearings, and industry events. These exhibits have been and are scheduled to be shown roughly 40 times in FY 1992-1993.

Additional outreach efforts have included providing staff specialists to speak at career days for local high schools on such diverse topics as oceanography, marine biology, and endangered species. Staff professionals have also been deeply involved in the development of the educational aspects of the Aquarium of the America's in New Orleans, and have given several graduate-level talks to the volunteers and staff of the aquarium.

Outreach has also been extended into areas of the GOM where MMS-regulated activities have become controversial. Staff professionals have contacted and spoken to many civic groups in the Florida panhandle, where potential offshore activities have become a matter of great concern. Local special-interest groups were contacted and a small staff of volunteers presented information on the role of the MMS and offshore activities in their region.

Professional staff of our GOM office are very involved in activities at the Flower Garden Banks National Marine Sanctuary (FGBNMS) and planning of oceanographic research at nearby gas and oil structures. Dr. Ann Bull, a marine biologist on the staff, serves on the FGBNMS Working Group on Sanctuary Development, and often participates in MMS- or Sanctuary-sponsored diving activities at the Banks to monitor the health of the Banks. Mr. Ken Adams, Regional Supervisor for Leasing and Environment, serves on the Steering Committee of the Flower Garden Ocean Research Project, the purpose of which is to promote oceanographic research at offshore gas and oil platforms.

Additionally, members of our six-person Regional Scientific Diving Program have cooperated with and assisted the Louisiana Artificial Reef Program over a 3-year period. They have gathered information concerning the establishment of sessile biotic communities and fisheries stocks at artificial reefs assembled from portions of decommissioned gas and oil platform structures, and have emplaced marker buoys to serve the other users (both divers and fishermen) of these "steel reefs."

Cooperation and Coordination with Other Federal Agencies, Gulf Coast States, and Universities

Much of the research described above is conducted in close cooperation with other Federal agencies, Gulf Coast States, and universities. Several other cooperative efforts should be brought to your attention.

The EPA has joined the MMS in the preparation of two recent lease sale EIS's in the GOM under the terms of a cooperative agreement between the two agencies. A reciprocal agreement is being developed for the MMS to assist the EPA as a cooperating agency in preparing an EIS to meet EPA's NEPA obligations for the issuance of National Pollutant Discharge Elimination System permits in Gulf waters.

The MMS has entered into a cooperative agreement each year since FY 1983 with the Texas Bureau of Economic Geology (BEG), which serves as the central point of contact between the MMS and the Geological Surveys of the Coastal States, including Hawaii and Puerto Rico. These States conduct geologic studies relevant to the needs of the Coastal States as well as to the DOI's offshore gas, oil, and marine minerals programs. Funds obligated through FY 1992 total $4.5 million.

The MMS and the U.S. Department of Energy awarded a $3.8 million contract to the Texas BEG in October 1992 to prepare a gas and oil resource atlas series covering the offshore northern GOM. The results of this 4-year effort will be used by exploration geologists to identify areas of greatest resource potential in the GOM as well as assisting the MMS in regional geologic studies, the next National Resource Assessment, reserve inventorying, and lease sale evaluations.

This concludes my prepared remarks. However, I will be pleased to any questions the Subcommittee may have regarding MMS activities and programs in the GOM.

TESTIMONY
by
Texas Land Commissioner Garry Mauro
before the
Subcommittee on Oceanography, Gulf of Mexico and the Outer Continental Shelf
of the
House Committee on Merchant Marine and Fisheries
April 23, 1993
Corpus Christi, Texas

Chairman Ortiz. Members of the Subcommittee. I appreciate your giving me this opportunity to comment on why we must change the way we look at the Gulf of Mexico.

As Land Commissioner, I'm responsible for the some 4 million acres of state coastal and submerged lands. That responsibility made me aware of the problem of marine debris, which, in turn, led to the Land Office's twice yearly Adopt-A-Beach cleanups, our push for U.S. ratification of MARPOL Annex V, and subsequent gaining of Special Area Designation for the Gulf and Wider Caribbean under that treaty. In addition, in 1989, the Legislature designated the Land Office as the lead agency for developing a Coastal Management Program, and, with the Texas Oil Spill Prevention and Response Act of 1991, added the state oil spill program to our responsibilities.

A decade of expanding responsibility for the Texas Gulf Coast has driven home to me two essential facts: The Gulf of Mexico is an economic and environmental treasure; and, the Gulf is under siege.

There is another thing I've learned over the last ten years: We can't go it alone. Wind and tide and ocean currents do not recognize jurisdictional lines drawn by the cartographer's hand.

Texas has to work in concert with the other Gulf states and with the federal government. The Oil Spill program works with the Regional Response Team. The Land Office has been involved with the EPA's Gulf of Mexico program for the last five years and I sit on the Policy Review Board for the State of Texas. Any hope of better sustaining and developing the marine resources of the Gulf depends upon cooperation and coordination among the five Gulf Coast states and with the federal government.

However, even that degree of cooperation is not enough. The Gulf of Mexico is the locus of an international boundary. But wind and tide and current honor it no more than they recognize state boundaries.

What affects the Gulf of Mexico affects Mexico just as it affects the United States. Urban and agricultural runoff threatens the seafood harvest destined for the tables of Mexico as much as it threatens ours. Debris from maritime traffic fouls the nets of American and Mexican shrimpers and fishermen alike. And in this era of NAFTA and increased trade, the risks increase for both nations. More oil and chemical tankers sailing to our ports -- carrying both the materials for economic growth and the potential for catastrophic spills. More economic growth on land means ever growing populations living close to the coast -- and that means more sewage, more urban runoff, more toxic runoff.

My point? It's a simple one. We cannot preserve and improve the economic, environmental, and aesthetic value of the Gulf unilaterally. The key to a sustainable Gulf of Mexico lies in a lasting relationship with Mexclo and, in due course, with our other maritime neighbors.

The efforts already underway to make a reality out of the promise of Special Area Designation for the Gulf and Wider Caribbean under MARPOL Annex V demonstrate that such a relationship is possible. In fact, next week we are hosting a MARPOL Annex V Enforcement Training workshop for six Eastern Caribbean countries in Corpus Christi.

MARPOL shows that it's possible and the nascent era of free trade under NAFTA adds further impetus for establishing such a relationship. Furthermore, the Gulf of Mexico Commission set forth in the "Gulf of Mexico Act of 1993" recently introduced by Texas Senator Bob Krueger provides a U.S. vehicle for common discourse with Mexico about a matter that is vital to all.

"Save the Bay" demonstrated the effectiveness of joint efforts to preserve and improve Chesapeake Bay and the U.S.-Canadian cooperation in the Great Lakes cleanup showed that joint efforts can be effective across international lines. I strongly urge that the subcommittee recommend a similar cooperative arrangement to save America's sea -- the Gulf of Mexico.

Thank you. I'll be happy to answer any questions you may have.

CORPUS CHRISTI STATE UNIVERSITY

TESTIMONY BEFORE THE

COMMITTEE ON MERCHANT MARINE AND FISHERIES SUBCOMMITTEE ON OCEANOGRAPHY, GULF OF MEXICO, AND OUTER CONTINENTAL SHELF

THE HONORABLE SOLOMON ORTIZ, CHAIRMAN

BY

Dr. Quenton R. Dokken

Associate Director
Center for Coastal Studies, Corpus Christi State University

Executive Director
Gulf of Mexico Region, Regional Marine Research Program

Executive Director
Gulf of Mexico Foundation

Coordinator
Flower Garden Ocean Research Project

Past Executive Director
Texas State Aquarium

EPA Gulf of Mexico Program
Current member - Living Aquatic Resources Technical Subcommittee
Past Governor Appointed Representative,Citizen Advisory Committee
Past member - Freshwater Inflow Technical Subcommittee

IN ASSOCIATION WITH

Dr. Ruth Bakke, Dean, College of Science and Technology,
Corpus Christi State University
Dr. John W. Tunnell, Director, Center for Coastal Studies
Dr. Nicholas C. Kraus, Executive Director Elect, Conrad Blucher
Institute for Surveying and Science
Dr. Steven Barnes, Director, National Oil Spill Control School
Dr. Alan Berkebile, Director, Center for Water Supply Study

April 23, 1993

Corpus Christi State University
Corpus Christi, Texas

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TESTIMONY

Congressman Ortiz and honorable committee members, it is with great appreciation that I come before you today to address stewardship of the Gulf of Mexico. Encompassing 600,000 square miles, the Gulf of Mexico is perhaps the most economically productive body of water managed by the United States, producing nearly $100 billion per year in economic activity. The Gulf is being threatened by growing populations, habitat destruction, over harvesting, and point and non-point source pollution, all compounded by inadequate knowledge and understanding of its complex ecosystems.

A cornerstone of the strategy to ensure the health and productivity of the Gulf must be effective management and research programs with adequate funding. And yet, a recent report of the National Research Council (1992) stated that, "Fiscal support in the United States has not kept up with scientific progress, whereas other countries have increased their capacities to conduct oceanographic research. To respond to these challenges, federal agencies and the academic oceanography community need to establish productive new partnerships."

There are several Federal programs that can have a significant impact in our efforts to better understand and manage the Gulf that have either not been legislated or are under-funded.

EPA Gulf of Mexico Program:

Yet to be passed into law, this program has established a track record for identifying environmental degradation issues of immediate concern, developing actions plans to address these problems, and integrating the general public into hands-on remediation efforts.

NOAA Sea Grant College Program:

Sea Grant College Programs have an exceptional record of contribution to the study of the Gulf of Mexico, the development and transfer of technology to the private sector, and public education. However, funding has not kept pace with need. As a Sea Grant program, the "Marine Biotechnology Program Act of 1993" will contribute to long-term resource management planning and the development of new resource products from the Gulf by expanding our knowledge of the Gulf's living resources.

NOAA Regional Marine Research Program:

Passed into law in 1990, and inadequately funded since, the Regional Marine Research Program is intended to serve as an oversight program viewing the "big picture" of research activities and needs, providing research coordination through the collation and dissemination of information. By identify gaps in our understanding of the basic ecosystem processes and ecology of the Gulf of Mexico, and focusing efforts and resources towards eliminating these deficiencies, the Regional Marine Research Program can help to achieve greater productivity and cost effectiveness in the expenditure of research dollars.

NOAA National Marine Sanctuary Program:

Long-term monitoring and study of the coral ecosystems of the Flower Garden Banks National Marine Sanctuary will serve to expand our understanding of coral reef ecosystems as-well-as detect global change. These efforts should be adequately funded. The Office of the National Marine Sanctuary Program and the Gulf of Mexico Foundation, a private 501(c)(3) non-profit corporation, have teamed up to solicit funds from the private sector to support study and monitoring programs.

NOAA National Underwater Research Program:

Internationally, we are losing our competitive edge in the exploration, study, development, and utilization of oceanic resources. The National Underwater Research Program should be passed into law and directed not only to the study of the oceans, but also to the advancement of underwater technology. A National Underwater Research Program station should be established in the Gulf of Mexico.

Corpus Christi State University (Texas A&M System)

At Corpus Christi State University, we strive to promote partnerships with private industry, other academic institutions, and state and federal resource management agencies to attack the challenges of understanding and utilizing the Gulf of Mexico in a comprehensive long-term framework.

The Center for Coastal Studies not only conducts applied and basic marine research, but also develops and supports programs such as the Center for Environmental Studies and Services, the Flower Gardens Ocean Research Project, the Adopt-A-Wetlands Program, and the Gulf of Mexico Foundation. The Conrad Blucher Institute for Surveying and Science and the Texas General Land Office have collaborated to install a real-time remote sensing network to monitor tides, meteorology, and other marine environmental parameters.

The National Spill Control School was designated by Congress in the Oil Pollution Act of 1990 as a training and research resource to the National Response Team, and has since trained thousands of people from private industry and government agencies to respond to and manage spills of oil and hazardous materials. And, the Center for Water Supply Studies is working to find solutions to meeting one of the greatest environmental challenges facing Texas, the supply and allocation of freshwater.

Mr. Chairman and honorable committee members, I and my associates at Corpus Christi State University are prepared and committed to assisting you in expanding our knowledge and understanding of the complex ecosystem dynamics of the Gulf of Mexico, and in developing resource management strategies to ensure its longevity and productivity. We urge you to support those programs necessary to achieve these goals. Thank you for your time and effort.

Quenton Dokken, Ph.D.
April 23, 1993

CORPUS CHRISTI STATE UNIVERSITY

CENTER FOR COASTAL STUDIES

CORPUS CHRISTI STATE UNIVERSITY

STATEMENT OF PURPOSE

The Center for Coastal Studies, established in 1984, is an interdisciplinary research unit of the College of Science and Technology at Corpus Christi State University. The main purpose of the center is to perform coastal ecosystem research and contract studies on the Padre/Mustang barrier island chain, the Laguna Madre, and the Nueces Corpus Christi Bay Complex. The Center for Coastal Studies is located in the Center for the Sciences on CCSU's Ward Island campus, which is located between Corpus Christi Bay and Oso Bay, on the eastern side of Corpus Christi. Access to local marine/estuarine environments, such as oyster reefs, salt marshes, seagrass beds, tidal flats, sandy beaches, and jettied rocky seashores, is just minutes away.

Operating as a state-supported institute, the Center for Coastal Studies is committed to coastal environmental/ecological research, teaching, and service in the Coastal Bend and beyond.

RESEARCH PROGRAM

Research and contract work conducted by the Center for Coastal Studies is both pure and applied. Faculty and graduate students associated with the Division of Science are currently working in benthic ecology, coral reef ecology, mariculture, coastal geology or colonial waterbird ecology. The Center for Coastal Studies also has several cooperative work agreements with the U.S. Fish and Wildlife Service (Ecological Services, National Wetlands Research Center, and National Fisheries Contaminant Research Center) and the Texas Water Development Board. These agreements are designed primarily to aid these agencies in providing solutions to a variety of practical problems existing in coastal south Texas. Current studies involve:

- determination of potential for creation, restoration, and management of shallow wetlands in south Texas
- development of management recommendations for colonial waterbird rookery islands along the Texas coast
- wetlands creation/mitigation monitoring and site development of a 200-acre restoration area in Nueces Bay, Texas
- Laguna Madre waterfowl and seagrass distribution/ecology studies
- long-term water quality monitoring at sites along lower one-third of Texas coast

RESEARCH FACILITIES

The Center for Coastal Studies is located in the Center for the Sciences at Corpus Christi State University. This facility contains classrooms, laboratories, shop, and storage for field and laboratory equipment. Future plans include a new cooperative building for the Center for Coastal Studies and various state and federal agencies.

Corpus Christi State University library holdings include 286,787 books and 1,698 periodical titles. Available university computer facilities include a Vax 8200, IBM 4361, and numerous IBM compatible microcomputers in a microcomputer laboratory.

Field vehicles include two full-size four-wheel drives, two vans, two 23-foot center console outboards, and several small jon boats.

Cooperative studies have included work at other nearby marine centers, including the University of Texas Marine Science Institute at Port Aransas and the Texas A&M Shrimp Mariculture Project in Corpus Christi near the Laguna Madre.

ACADEMIC PROGRAM

Although the Center for Coastal Studies is not degree granting, it is within the College of Science and Technology of Corpus Christi State University, which does offer B.S. and M.S. degrees. Corpus Christi State University, established in 1973, is an upper level (junior, senior, graduate), state-supported university with an enrollment of about 4,000 students. The College of Science and Technology offers several degrees with a marine emphasis: B.S., Chemistry, B.S., Geology; B.S. and M.S., Biology. Students in the B.S. programs obtain either a degree in Chemistry or Biology with 20 credit hours in marine studies in lieu of a traditional minor. At the M.S. level, students choose either a thesis or non-thesis tract, both of which are 36 hour degrees. Most students in the M.S. Biology program conduct coastal or marine oriented research.

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A Campus of The Texas A&M University System

Submission to the

U.S. House of Representatives

Sub-Committee on Oceanography, Gulf of Mexico, and the Outer Continental Shelf

Committee on Merchant Marine and Fisheries

by

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Louisiana Universities Marine Consortium
Chauvin, Louisiana 70344

16 April 1993

Introduction

Firstly, allow me to thank you and the Committee very much for inviting me to testify at this important meeting of your Subcommittee on Oceanography, the Gulf of Mexico, and the Outer Continental Shelf. It is an honor to be able to brief the members of the Subcommittee on the Louisiana Universities Marine Consortium's (LUMCON's) views on research needs in this geographic region in the area of marine science. A great deal of scoping and planning has been in progress in this area, and this hearing therefore comes at an opportune time.

There have been five or six scientific workshops held within the past nine months, designed to identify research priorities related to marine science needs in Louisiana and the Gulf of Mexico. These are:

- The NOAA Regional Marine Research Program (RMRP) Sub-Regional Workshops, prioritizing marine science research needs in the Gulf of Mexico, held in January 1993 respectively in
  - Florida
  - New Orleans (encompassing representatives from Louisiana, Mississippi, and Alabama), and
  - Texas.
- The Louisiana EPA-EPSCoR (Experimental Program to Stimulate Competiveness in Research) Planning Workshop held in August 1992 at the LUMCON Marine Center in Cocodrie, La.
  - prioritizing the needs of environmental science and engineering, including marine science, in Louisiana, and
- Two NASA Land-Sea Interaction Workshops, the last of which was held at the John C. Stennis Space Center, Mississippi in April 1993.

Another two-day planning workshop finished only yesterday in Louisiana. It was the EPA/US Fish and Wildlife Workshop on the introduction and effects of contaminants in Louisiana's marshes. The findings, of course, are not yet available.

Allow me to summarize the findings of the workshops listed above, and point out how they relate to Louisiana's needs in oceanography and marine science.

The NOAA Gulf of Mexico Regional Marine Research Program Workshop

It was recognized early on by the Gulf of Mexico Regional Marine Research Board (RMRB) that the eastern, central, and western regions of the Gulf of Mexico varied in their physical, chemical, and biological characteristics. In addition, their resources and the uses of those resources also varied . For this reason, it was decided to hold three separate sub-regional workshops. At the central region workshop, there were approximately 45 participants representing academia and relevant federal and state agencies.

The workshop identified a number of research priorities for the central region of the Gulf of Mexico shown below in **Table 1**. They varied to some degree from those identified at sister workshops in the east and west. Priorities assigned to the target issues covered by the Board were the result of individual rankings by those present at the workshop(s). The ranks presented below are the results of averaging:

Table 1

Research Areas	Comparative Research Priorities			
	Western	Central	Eastern	Gulf Mean
Habitat use	1	2	1	1
Nutrient Enrichment	3	1	4	2
Freshwater Input	2	5	2	3
Ecosystem Modifiers	4	3	3	4
Population Dynamics	5	7	6	5
Trophic Dynamics	7	4	7	6
Physical Modifiers	6	9	5	7
Toxic Materials	8	6	8	8
Coastal Erosion	9	8	10	9
Saltwater Intrusion	10	10	11	10
Catastrophic Events	11	11	9	11
Global Change	12	13	12	12
Nuisance Species	13	12	13	13

Louisiana has its own research priorities, which may be nested within the central region's priorities. Louisiana, Mississippi, and Alabama do not share all of the same environmental problems. For example, saltwater intrusion, although ranked relatively low in the central region as a whole, is a major problem in the extensive wetlands of southern Louisiana. One has only to fly over vast areas of dead cypress stands to witness the effects of saltwater intrusion. This is due to coastal erosion, subsidence of the wetlands, and the construction of levees. In conjunction with this, coastal erosion ranked only of moderate importance in the central region, due its relative importance in Mississippi and Alabama. It is well known, however, that Louisiana has the highest rate of coastal erosion in the United States, and one of the highest in the world. Toxic materials would also have been ranked higher than above for Louisiana because of the States extensive oil, gas, and petrochemical industries.

Within each of the above research areas, numerous questions were identified by those attending the workshop as requiring attention with respect to scientific research. These questions were framed not only in the context of basic science but also in the context of the needs of the state and the region, recognizing the many environmental problems Louisiana and its sister states are facing. A listing of those specific research questions identified in the central region of the Gulf may be found in Appendix I.

The RMRB is currently involved in a planning exercise, and I believe that the Executive Director or Chairperson of the Board will submit an interim report to you for this Sub-Committee hearing.

The EPA-EPSCoR Workshop

The EPA-EPSCoR Planning Workshop drew together 54 participants in environmental science from academia, and federal and state agencies. The purpose of the workshop was to identify means by which to enhance environmental science and engineering research in Louisiana, including in the marine sciences, identify research and education priorities in this area, and build a strategic plan to address those priorities. This resulted in a report submitted to EPA through the Louisiana State Board of Regents (Sammarco, 1993), which is summarized below.

The workshop was also attended by several out-of-state experts who helped provide guidance and independent insight into the issues being discussed. A panel of Expert Consultants, of which they were a part, has monitored the entire planning process and continues to do so.

The three general categories of activity considered at the workshop were

- Research
- Education, and
- Policy and regulation.

Within each of these categories, the following issues were perceived as requiring attention. They are presented in order of priority. Only those pertinent to marine science and oceanography will be presented here.

Research in Environmental Science and Engineering

(1) Coastal Wetland Loss and Effective Remediation Practices

Coastal wetland loss is a primary area of concern for the State, as Louisiana has the highest rate of coastal erosion in the United States. Aggravating this problem is the fact that the state's most important natural resources and key industries are intimately tied to the coast - particularly its fisheries, and the oil and gas industry. Understanding the impact of wetland loss is critical to the state, and developing and identifying effective remediation practices requires immediate attention.

Research in the area of ecological impact and remediation is in need of support, including the alteration of known remediation techniques, testing of recommended ones, and the development of new methods. Identification of affected habitats and ecosystems at risk, and the effects of habitat destruction, also need to be considered. The identification of useful biomarkers, the collection of baseline data, and continuing monitoring need attention, along with the social, economic, and institutional impacts of coastal wetland loss.

The projected compounding effects of sea level rise also need to be considered.

(2) Pollution Prevention, Waste Minimization, and Enhancement of Recycling

This area was identified as second in priority for enhancement in Louisiana. Among the types of approaches to be considered was the development of new disposal technologies. This would include the following *in situ* remediation:

- new techniques in ecological engineering
- decreasing the environmental impacts of production and transportation of oil and gas
- enhancing the management of hazardous wastes, and
- developing better control measures for spills.

These initiatives should be taken in partnership with industry, hopefully with supplementary support from that sector.

Impacts of land reclamation were also identified as requiring attention from researchers.

Research should also include the impact of pollution on physical, biological and cultural systems. It should contribute to the promotion of ecologically and economically sustainable development of our natural resources.

(3) Non-Point Source Pollution, Its Impacts, and Effective Remediation

This was recognized as an area needing attention throughout the US, but particularly in Louisiana. Perhaps the largest problem being experienced in Louisiana is related to agricultural runoff and other sources which add nutrients to our rivers, estuaries, and coastal waters. The addition of too much nutrient causes eutrophication and hypoxia ("dead zones"), the processes and effects of which need to be better understood.

The Mississippi River drains approximately two-thirds of the continental U.S., discharging those contents into Louisiana's coastal waters. Loading of contaminants into the Mississippi River is a major concern, including those derived from pesticides, herbicides, and material from failing septic tanks - a common problem in this deltaic region. The effects on natural habitats need to be understood; and those habitats - so critical to the economy of the state - need to be protected. Research into the sources, impacts, and potential remediation measures for urban run-off is also needed.

(4) Development of a State-Wide Geographical Information System (GIS)

The concept of a state-wide GIS arose repeatedly in the Workshop. The purpose of such would be to centralize, and make compatible, data from disparate sources around the State. Greater coordination and collaboration is needed between both data collectors and the users of data. This would apply to a number of sectors of the community - local government, state government, federal government, academia, industry, and the private environmental consulting firms. If the state is to effectively address many of the environmental issues facing it, it must develop a centralized database - one which could provide an ecological atlas, natural resources inventory, and a chemical toxin distribution database.

An inventory of nuisance or exotic species and definition of migratory routes of animals which traverse Louisiana and use its wetlands and coastal waters should also be included.

(5) Use and Enhancement of Risk Assessment Techniques

Risk needs to be assessed in Louisiana for the bio-transfer and bio-accumulation of harmful pollutants in commercial fisheries. Municipal waste and non-source pollution should be considered in such an analysis. Environmental equity also needs to be taken into consideration.

In studies of this sort, it is important that actual calculated risk be differentiated from risk as perceived by the public. Education of the public will be necessary after the facts are determined.

Risk assessment would probably best be addressed through collaborative projects conducted by specialists in the disciplines of toxicology, engineering, sociology, economics, and political science.

(6) Groundwater Contamination

The impacts of contaminated groundwater on natural ecosystems as well as on humans need to be assessed. A distinct need has been identified for the assessment of groundwater quality. There is a great deal of concern about the lack of regulation in this area and the lack of expertise at the level of local government to assess the problem and address it, once it has been properly defined. New techniques for preventing contamination of groundwater and its remediation, once contaminated, need to be investigated.

(7) Habitat Loss and Destruction

This category extends beyond that covered above under coastal erosion, for it encompasses habitats threatened by pollution, development, flooding, and other anthropogenic activities harmful to the environment. Ongoing monitoring and surveys, assessment of impacts, and identification of biomarkers represent important needs for Louisiana to help protect its natural ecosystems.

(8) Toxicology and Environmental Health

The toxic effects of the many pollutants which plague the state on key biota need to be identified. These need to be analyzed in conjunction with the distribution of toxins and their discharge points. The distribution of environmentally linked health problems, their distribution, and probable causes need to be examined in detail and understood before effective remedial action can be taken.

(9) Large-Scale Changes in Natural Processes

Louisiana has been subjected to tampering with major natural forces on a large scale, and this has dramatically influenced the state of its natural ecosystems. Perhaps the best example is maintenance of the present course of the Mississippi River by the U.S. Army Corps of Engineers. This diversion and channelization has had major impacts on coastal erosion rates, flooding frequency, and salt-water intrusion rates. This in turn has had cascading effects on the State's social and economic structure.

One area which requires further investigation and evaluation for feasibility is the possibility of easing human control of, or correcting for negative effects caused by, these large-scale manipulations.

(10) Development of Research Centers

As environmental problems vary from one section of the state to another - from an ecological, social, and economic perspectives, it is recommended that Research Centers be set up around the state as required. These would be dedicated to long-term basic research, to the end of addressing regional problems, identified and jointly agreed upon by the State and EPA.

Environmental Education

(1) Coordination of Environmental Education

The need for central coordination of environmental education, including marine environmental science, within the state was identified by workshop participants. It is clear that some state entity, perhaps the Department of Education in conjunction with the Louisiana State Board of Regents, needs to take responsibility for this.

This state entity could have a central office and regional satellites, with each of the latter providing education coordinators for, say, each parish - oriented towards local issues. Its purpose would be to focus the efforts of the state in environmental education and reduce competition, duplication of effort, and gaps in the university level education system. A survey could be performed to assess the current status of Louisiana's environmental education programs - both its strengths and weaknesses. A complete K-16 program could then be designed.

A central office could also serve as a source of outreach materials. Such materials should include newly developed environmental science software, the development of which the office should sponsor, and environmental career track information. The office could distribute this material to schools through guest speakers and the media. Videos could also be provided.

It could also promote the development of a state-wide GIS system and promote partnerships between industry, government and academia for internships and other collaborative education ventures.

(2) Degree Programs

There is a need to further develop environmental science degree programs in Louisiana, including those encompassing the marine sciences. Those which already exist need to be expanded and enhanced. This can be done via a number of techniques, such as adding courses to existing curricula. Before this can be done, however, it will be necessary to catalogue existing education programs.

It is important that projected employment demands be considered when such programs are being planned. Thus, such planning would best be done in conjunction with relevant state and federal agencies.

There is also the need to enhance faculty in key schools. Faculty and student exchanges with existing centers of excellence elsewhere in the nation (and the world) should be made available. Seed grants to improve faculty, curricula, and equipment would be most helpful.

(3) General K-12 Programs and Teacher Training

Training of primary and secondary school teachers in environmental science, including the marine sciences, is recognized as an important need in Louisiana. In order to reach as many teachers as possible, incentives such as paid workshops need to be provided, along with the provision of take-home materials for classrooms or university credit. Materials are needed which would orient the teachers themselves, showing them how to relay the information to their students. Curricula need to be enhanced, and infusion techniques should to be used.

(4) Dedicated K-12 Environmental Science and Marine Science Programs

Programs such as the LUMCON/NSF Young Scholars Mentoring Program or the LUMCON/Northwestern La. University Advance Program are recommended as models for exposing K-12 students to environmental science and marine science. Such programs provide a hands-on field experience for the children, immersing them for a period of time in the ecosystems about which they must learn. They become exposed both to the textbook facts and hands-on field experience and research.

Concepts of the interconnectedness of ecosystems, the role of humans in influencing ecosystems, and sustainable development should be emphasized in such a program.

Environmental Policy and Regulation

(1) Information Transfer

The need to provide accurate and reliable information in the area of environmental science and engineering, including marine science, to decision- and policy-makers is critical, because regulatory policy may well follow the delivery of that information. The scientific community is not generally concerned with recommending policy, but simply supplying those responsible for such with the best and most accurate information possible.

This points up the need for deriving an effective mechanism for information transfer. Some formal mechanism for communication between the scientific/technical community and policy makers needs to be developed and implemented.

Improved communication with the public on environmental issues is also needed, as has been successfully accomplished in the Chesapeake Bay Project. That project could serve as a model here.

(2) An Environmental Policy Institute

It is recommended that an Environmental Policy Institute be set up to study the effectiveness of state environmental regulations. This body could also conduct comprehensive planning for Louisiana and develop siting criteria to address environmental equity issues.

Such an institute should involve several universities as well as state and federal agencies. It should conduct policy research and fact-finding missions.

(3) Recommended Changes for Current Environmental Policy

It is recommended that risk management play a more important role in the design of environmental policy. It should also be used as a basis for enhancing consistency in state regulations, wherever possible.

With respect to specific environmental policies currently in place, it is recommended that the following concepts or alterations (as they relate to marine science) be considered for implementation:

- Utilizing sediments derived from dredging the Mississippi River for wetlands restoration and other possible constructive uses
- Using enhanced indicators to assess the state's performance in the area of environmental protection
- Reviewing and consolidating existing environmental regulations
- Analyzing the effectiveness of current state and federal environmental regulations in Louisiana and making the necessary changes to enhance that effectiveness
- Analyzing the issue of flood protection *vs.* wetlands loss, and providing policy direction in this area, and
- Increasing the amount of funding to research, so that it approaches that used for remediation; this will help to promote good planning, and a pro-active rather than a reactive stance for both the state and the federal government.

Response of Scientific Community to Call for Research Proposals and Paucity of Available Funding

In response to a call for concept proposals for the EPA-EPSCoR Program, the LUMCON Office of Special Programs received 72 concept proposals from 22 departments, institutes, and centers within 16 colleges, universities, and institutions in Louisiana and Texas (collaborative proposals received from the latter state). This response far exceeded that expected. It bespeaks the need for environmental research in Louisiana, and the will and desire to conduct that research.

Numerous proposals were received in each target issue category for a total requested funds of $15,439,067 for the three year period, with $5,595,622 for the first year alone. This contrasts sharply with the $200K per annum potentially being offered by EPA. To say that there is a great demand for environmental research and a small supply of funds to support that research would be a gross understatement.

Funding anticipated under the EPA-EPSCoR program, if our implementation proposal is successful, is $600K for three years. A potential 1:1 match from the Louisiana Educational Quality Support Fund (LEQSF) would bring the maximum available to $1.2M for three years. Thus, requests exceed available funding by 12.9 timess. The demand for first-year funding alone from this program is 13.9 times higher than potnetial funding - and 27.8 times higher than that potentially being provided by the agency itself.

Caution is advised. This degree of under-funding has the potential effect of causing great disappointment in EPA on the part of the many environmental scientists who participated with such enthusiasm and hope in the development of an environmental science program for Louisiana, specifically with EPA.

It is my **recommendation** and that of the EPA-EPSCoR Steering Committee that the Environmental Protection Agency seriously consider further developing a collaborative program with the State of Louisiana in the area of environmental research. The problems which exist in the State are immense, and the expertise to handle them is, to a certain degree, available within the state. The EPSCoR Program may provide only enough funding to scratch the surface of these problems. It is recommended that EPA consider increasing its funding to Louisiana, either under a new collaborative program between EPA and Louisiana or other existing appropriate research programs which can accomodate the requests. Such a program may require new funds.

The NASA Land-Sea Interactions Workshop

Over the past few months, several workshops were held by NASA at the John C. Stennis Space Center in Mississippi to determine research needs and priorities for remote sensing as they relate to land-sea interactions in the Gulf of Mexico. Researchers and state and federal agency representatives from Louisiana represented an important contingent at those workshops and contributed to the identification of research questions which need to be addressed.

I shall not provide an extensive report on either of these workshops but refer the Sub-Committee to the following persons for additional information concerning the results:

- Dr. John P. Wefel
  Director
  LaSPACE - The Louisiana Space Consortium
  277 Nicholson Hall
  Louisiana State University
  Baton Rouge, La. 70803-4001

  Tel: (504) 388-8697
  FAX: (504) 388-1222

- Dr. Armond Joyce
  Director
  Science Division
  NASA
  John C. Stennis Space Center
  Stennis Space Center, Miss.

  Tel: (601) 688-3832.

Below are research needs identified by the first workshop held earlier in the year:

Determination of

- the fate of nutrients, organic matter, and suspended sediments which enter coastal waters via riverflow, rainfall, and direct anthropogenic discharges
- how upstream land-use changes are linked to changes in these inputs
- how estuarine plants and animals in the food web respond to changes in nutrients, organic matter, sediments, and other substances derived from the watershed
- how the biogeochemical cycling of organic carbon, nitrogen, phosphorus, silica, and sulfur responds to changes in inputs and climate
- how changes in climate and resultant changes in amounts of sediment produced will affect coastal sedimentary processes, turbidity, coastal circulation, river flow, tides, and flushing rates of coastal waters
- the factors which affect recuitment of marine animals higher in the food web, and how those factors can ultimately control ecological community structure at lower trophic levels in coastal waters on a large scale
- how future ecosystem changes, including those caused by harvesting, may affect populations of organisms higher in the food web, and
- the distribution and role of each major habitat in the coastal zone, and how natural and anthropogenic changes may affect these habitats.

The Subcommittee is also referred to Tanis *et al.* (1992), where future needs for satellite data in coastal monitoring and resource management are outlined. In summary, they identify several major areas as needing attention:

- Habitat loss from nutrient enhancement, particularly as it relates to effects on
    - shellfish and pelagic fish
    - hypoxic conditions ("dead zones") due to nutrient loading from the Mississippi and Atchafalaya Rivers
    - turbidity
    - changes in water temperature
- Habitat loss from physical alteration, particularly
    - wetlands loss due to subsidence, erosion, rising sea level, canalization, dredging, spoil disposal, drainage, back filling, etc.
    - loss of seagrasses and associated living resources
- Coastal erosion - barrier island and wetlands; documentation of
    - subsidence
    - storm effects
    - effectiveness of mitigation efforts, and

- Public health, as it relates to pathogenic organisms (in shellfish) and biotoxins (toxic algal blooms), addressed *via*
  - tracking effluents and waste discharges through tidal coastal drainage systems, and
  - identifying point sources for pollution.

Complementarity in Research Needs

As should be obvious by now, the research priorities identified by the various groups participating in the above workshops overlap greatly. This has been noted generally by researchers and agency representatives throughout the Gulf. It is an indication that the problems experienced in Louisiana and the Gulf have been broadly identified and agreed upon. The research needs of each of the above groups integrate well with those of the next.

Coordination of Research Efforts

The question arises as to how the federal government might best coordinate and lead efforts to meet marine research and science needs in the Gulf.

The research activities currently in progress in the Gulf of Mexico, sponsored by various state and federal agencies, are clearly insufficient to handle the myriad of problems faced by this region and to answer questions necessary for protection of the natural resources upon which the Gulf region is so heavily dependent.

The NOAA Regional Marine Research Program was set up to help coordinate research within specific regions around the United States, the Gulf of Mexico being one. It is designed to identify, prioritize, sponsor, and promote research in those areas which are not currently receiving sufficient attention. It is my opinion that the RMRB's time has come, because the problems we face are growing in magnitude. Our attempts to address these problems are unfortunately fragmented - at a time when a coordinated effort is required. I believe that the RMRB can provide this coordination.

Concluding General Recommendations

My general recommendations are as follows:

- Increase funding to the federal agencies sponsoring marine science research to address the issues identified above
  - In particular, increase funding to the State of Louisiana from EPA to address the issues raised in the recent EPA-EPSCoR environmental science and engineering workshop, to be used in a collaborative State/Federal research program

  - Some of those issues pertaining specifically to the oil and gas industry on the OCS off Louisiana may be addressed through the DOI-MMS, particularly the MMS/LUMCON University Research Initiative Program on OCS activities and the related MMS/LSU Coastal Marine Institute (CMI) Program.

  - Issues relating to shellfish contamination in the Gulf and potential hazards to human health may be addressed through the NOAA/NMFS/LUMCON National Shellfish Indicator Study (NIS)

  - Other relevant funding agencies for the Gulf include NSF, ONR, and NASA

- Coordinate the allocation and use of those funds for research through a central Gulf Board, specifically the Gulf of Mexico Regional Marine Research Board, for the purpose of

  - enhancing complementarity in research
  - avoiding duplication and therefore increasing cost-effectiveness
  - promoting information transfer
  - enhancing inter-disciplinary research, and
  - identifying and linking researchers with common interests and common goals to promote collaborative research

- Increase funding to the Gulf of Mexico Regional Marine Research Board for purposes of implementing the above.

References

Sammarco, P.W. 1993. The Environmental Protection Agency (EPA) Louisiana EPSCoR (Experimental Program to Stimulate Competitive Research) Planning Grant: A Report to the Louisiana State Board of Regents. LUMCON, Baton Rouge. 149 p.

Tanis, F., J. Ott, B. Griffith, T. Mace, and T. Parris. 1992. Assessment of future needs for satellite data in coastal monitoring and resource management programs. *Proc. First Thematic Conf. on Remote Sensing for Marine and Coastal Envts.*, New Orleans, La., June 15-17, 1992, p. 591-603.

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Appendix I

Gulf of Mexico Regional Marine Research Program

Notes Derived from the
Central Sub-Regional Workshop

including
Louisiana, Mississippi, and Alabama

New Orleans, La.
26-27 January 1993

GULF OF MEXICO REGIONAL MARINE RESEARCH PROGRAM
CENTRAL SUBREGION WORKSHOP
NEW ORLEANS, LA, 26-27 JANUARY, 1993

Freshwater Input

- Desirability of fresh water introduction, (effects on marshes).
- Effects of diversion of fresh water on fisheries (nutrients;phytoplankton-chlorophyll;oysters).
- Describe local inputs vs large rivers, including nutrient supplies and toxins.

Nutrient Enrichment, Transport, Cycling

- New nutrient inputs due to eddy-induced upwelling, and primary productivity at shelf breaks caused by this.
- Transfer of riverine nutrients to productivity.
- Natural and anthropogenic tracers or markers.
- Sediment exchange of nutrients, uptake and release.
- transformation of chemicals as they are transported from fresh, to estuarine, to marine waters.
- Flocculation processes and their effect on toxicants (a phenomenon of the plumes in the central GOM).
- Biogeochemical cycling (measuring sources and sinks)
- Limiting factors of productivity.
- Study sediments for historical record of nutrient enrichment.
- Effects of nutrient enrichment on fisheries and ecosystems that are supported by it.
- Study relationship between marsh deterioration and nutrient dynamics; productivity.
- Are marsh grasses nutrient limited?
- Effects of hypoxic zones on ecosystem.
- Effects on phytoplankton species composition.
- Location of oxygen demand in water column.
- Understand basic biogeochemical processes, especially sulfur and silicone.

Trophic Dynamics

- Indirect consequences of various manipulations: to include experimental design within various food webs (top-down carnivores to bottom-up nutrients).
- Effects of changes in volume, distribution patterns, and water quality character of river flow on productivity.
- Fisheries management and its effects.
- Nutrient dynamics.
- Sediment loads/turbidity.

- Understanding of trophic flows important to sustaining and supporting major fisheries (may be able to use toxics/contaminants as tracers).
- Effects of ocean warming.
- Study limiting factors (nutrients, light) and how they affect trophic structure.
- Food web dynamics are compressed; due to steep gradient, FW and marine food webs are in close proximity. Study this unique feature and how it differs from other coastal areas.
- Systematics (specific taxonomic questions are appropriate if they help solve other questions) or if it is to find alternative methods to study community composition.
- Focus on microflora and fauna studies to feed information to groups that are studying larger organisms.
- Trophic fate of production.

Toxic Materials

- Effects on evolutionary processes.
- Effects on ecological interactions.
- Means of assessing significance of localized contamination vs refinement of methods of detecting contamination.
- Refining methods to detect sublethal effects and threshold levels.
- Public perception of risks.
- Biomagnification with emphasis on human consumption.
- Poorly understood processes such as atmospheric input
- Develop process-oriented research rather than monitoring.
- Extend studies beyond the estuary and near coastal.
- Assessment of effects of regulatory reduction of toxins on resource health.
- Fate in biological systems, in trophic dynamics, fisheries safety.
- Basic bio-geochemical processes.
- Transport mechanisms.
- Biological modification (metabolic degradation).
- Transport and fate is central to toxics fate.
- Toxics (oil, gas and pulp/paper) as a tracer for circulation studies.
- All items listed as modifiers as they influence toxics.

Habitat and Coastal Erosion

- How is the marine botanical community structure affected by turbidity, nutrients and other modifiers?
- Wetlands, estuaries, nurseries, artificial reefs studies are applicable to central GOM.
- Role of and extent of land/water interface in production; impact of changes; at what point does it begin to have

negative effects.

- Habitat loss due to persistence of anoxia/hypoxia.
- Role of habitat modifications and losses on nutrient cycles.
- Surf zone dynamics (basic research).
- What causes waves to break? Causes for longshore currents?
- Hydrodynamics and coastal erosion processes need study.
- Shelf-sand transport; feeding the beach or sink? Oceanographers and geologists don't agree.
- Does protecting barrier islands also protect marshes?
- Geophysical and biological aspects of marsh protection.
- Compare marshes in each of the sub-regions.
- Synthesize physical, geological, and biological approaches to marsh accretion (use workshops to define new research needs).
- What are the basic biological/oceanographic processes in the open Gulf and have they been altered by human impacts, e.g. nutrient inputs, toxics, sediment transfer.

Nuisance and Exotic Species

- Identify specific examples and causes, e.g. Pacific shrimp, nutria.
- Study red/brown tides' causes and economic and ecological effects.
- Use sediment record to study trends in blooms.
- Human health implications of blooms.
- Baseline data.
- Parasites, both marine and fresh water. Trends.
- Impacts of stocking programs using "foreign" or limited pool genetic materials into native populations.
- Effects on native habitats (i.e. Eurasian water milfoil, Hydrilla, water hyacinths.

Catastrophic Events

- Coastal geomorphology with respect to storm events.
- Potential oil/gas and hurricane impacts which have important ecological and economic impacts.
- Understanding of effects of spatial and temporal scale (cumulative, catastrophic events); requires longer-time data sets, link monitoring (long term) to manipulations.
- Indirect El Nino effects.
- Need rapid response funds, i.e. Atchafalaya events, brown tides, spills, etc.
- How to measure long-term effects on organisms and populations.
- Oil Spills: study long term consequences and ecological impacts of bioremediation.

- Historical perspective; what were the effects of the event and details of the recovery.

- Can we assess previous effects to allow the prediction of effects, e.g. effects of an extremely low tide event in Panama were comparable to the effects of an oil spill.
- Effects of storms on species distribution, and comparing regular storm events to rare storm events.

Population Stability and Factors Influencing

- Transport mechanisms, larval success and forcing functions (large production of larval stocks, many driven ashore as nearshore and estuarine recruits, therefore, why aren't there relatively higher stocks in the Gulf compared to the South Atlantic).
- Reproduction and recruitment processes - especially in important commercial and ecologically significant species; controlling factors (physical, biological, climatological, i.e. El Nino).
- Population genetics as it relates to impacts, management tolerance, etc.
- Impacts of open-Gulf stocking on native genetic stocks and their success and dynamics.
- effects of global change.
- Marine mammals questions such as an inventory of what's there, strandings, die-offs, distribution and any trends in the above.
- How off-shore oil rigs have affected distribution of fish species in the Gulf.

Global Change

- GOM does not have the capacity to buffer increased temperatures so global change will have a large impact if temperature increases influence ecological processes.
- Marine meteorology.
- Air/sea interaction.
- Submarine gas production -carbon dioxide, methane, etc.
- sea level rise model (especially in LA) on coastal habitats.
- Effects of UVB on phytoplankton and zooplankton dynamics and production.
- What are the adaptive capabilities of Gulf organisms to gradual global change?
- Coastal impacts.
- Deep Gulf environment?
- Definition of global changes; baseline data for temperature.

Physical Modifications

- How modifications, especially dredging, influence circulation and the resuspension of toxics.

- How wetland and barrier modifications influence habitats.
- What causes mixing in shallow-water bays. Importance of wind and local river inputs on mixing.
- Mixing models with implications for dredging, drainage, etc.
- Innovative use of dredge spoil for marsh restoration.
- Basic research on sediment transport in marshes and wetlands.

Sociological Issues

- The review and inclusion of social studies as they influence the ecosystem health and water quality should take place.
- Commuting, lifestyle, population growth, economic growth (tourism), and how they affect inputs to the GOM (Mexico will double in population in 20 years).
- Stress GOM as having multi-use importance (shipping, oil, fishing, recreation, etc).

Information Management

- Addressed by the board rather than as a research priority.
- Matrix needed to cover areas funded by other agencies.
- Need for social/economic data on fisheries in general in the region, (e.g. shrimp).

Coastal Circulation

- Dynamics and numerical modeling of coastal circulation.
- Interactions of shelf and deep waters.
- Effect of fresh water on general circulation; transport.
- Estuarine to shelf scale nutrient budgets, including salinity.
- Physically limited light field (turbidity).
- Physical parameters of the little described 1-10m zone including sediment transport, fisheries recruitment.

MODELING

- Conduct independent peer review and evaluation of models currently in use by agencies involved in management of Gulf resources, and which of them are being used for decision making.
- Basic research should be used to feed and test the models but not be driven or dictated by models.
- It was suggested that this program would be better served by conducting modeling research, or refining the scale of existing models, rather than developing Gulf-wide scale models because of their cost and complexity.
- Shallow areas, 1-10 m surf zone and estuaries are not included in existing circulation models.

- Study the nesting of models, the embedding of a smaller scale model into a larger and allowing for input in both directions.
- Study rate processes; transfer coefficients, and how materials are transferred between trophic levels.
- Evaluation and plans for modifications of data collection schemes, schedules and frequencies to enhance model utility and accuracy; for meaningful calibration.
- Large-scale and meso-scale shallow-water and surface flow models; for understanding recruitment factors, predator-prey relationships, distribution of nutrients, toxics, contaminants, etc.
- Models for modifiers as mentioned above.
- Coastal erosion models, esp. for LA.
- Predator-prey relationships.
- Utility of neural network models in biological systems.
- Re-examine use of simple empirical models using multiple regression for prediction in biological system questions.
- If modeling is desirable, then there must be a commitment of resources for long-term data sets to truly develop reliable models.
- Emphasize model compatibility, e.g. time scale.
- Models work better when they have a narrower focus, e.g. shrimp, oysters.
- Model trophic differences of eutrophic and oligotrophic systems.
- Make models that are problem-specific, such as hydrological models and toxicologic fate/effects models, etc.
- Nutrient transport models would set up input for trophic model.

OTHER RESEARCH

BASELINE ASSESSMENT

- Establish a program to examine existing "grey" baseline data to assess usefulness for trends analysis, integration within and between other data bases, and for developing hypotheses for testing.
- Provide seed monies to amend on-going agency efforts by getting opportunistic ship time, to process specific samples, to sub-sample or other cost effective expansions of existing programs.
- Monitor "change" as a process.
- Chemical tags/biological tracers.
- Indicators of non-point source pollution.
- Cause-effect relationships.
- Sustainable/long-term (time series) ecological investigations in areas such as blue water ecosystems, chronic oil exposure, carbon/nutrient flux, coastal-blue water boundary exchanges.
- Study variability among many parameters.
- Organize existing baseline data sets with GIS

- Require data sharing as condition of funding and review all data sets.

METHODS/TECHNIQUES DEVELOPMENT

- Opportunistic approach (case by case) to R&D.
- Develop the use of satellite imaging/sea truthing interface with monitoring.
- Prepare for increases in quality and quantity of data sets.
- RMRP should assess region's awareness of data sets, coordinate data management and distribute information.
- Need better techniques for sedimentation, coliform assessment.
- Study utility, standardization, quantification of non-destructive video sampling techniques.
- Investigate the utility and methodology of toxic/contaminant compounds as markers for food web studies, bio-geochemical sampling.
- Improve sensitivity to allow for study of sub-lethal effects.

ENVIRONMENTAL ASSESSMENT

- Expansion of hydrocarbon reserves - DOE project.
- Need recovery studies.
- Need experimental manipulations to identify cause/effect relationships.
- Currently need work on: bycatch, offshore oil and gal, sand and gravel mining, dredging, runoff from paper mills, beach development.

Testimony of Texas Shrimp Association
Before House Merchant Marine and Fisheries Committee
Subcommittee on Oceanography, the Gulf of Mexico, and the
Outer Continental Shelf
The Hon. Solomon P. Ortiz, Chairman
Corpus Christi State University, Corpus Christi, Texas
Friday, April 23, 1993, (9:00 A.M.

My name is Nora Deyaun Brown Boudreaux, and my husband Ronald and I, and our daughter, Nicole Marie, reside at 825 Beach Boulevard, Laguna Vista, Cameron County, Texas, on the Gulf of Mexico and the Rio Grande, boundary between the United States and Mexico. We are engaged in the production of open-water shrimp (harvest) in the marine waters in the Gulf of Mexico. I am professionally employed as Environmental Director of Texas Shrimp Association, a non-profit organization chartered in 1950 to advocate for the harvest of native shrimp, their habitat in the Western Hemisphere, and to participate in trade talks at all levels of government for the preservation of this harvest from the steward perspective.

I am very grateful for this opportunity to speak for the users of the Gulf of Mexico, and I feel that this association is well-suited to this role, since the harvesters have a distinguished history of getting along with all other user groups that have made up the traditional family of resource-based enterprises in the Gulf of Mexico Rim, while always speaking out to protect the living aquatic resources, resource assets, and the wetlands, marshes, and rivers that enable the oceans to maintain viability and productivity.

Since the committee is already aware of the environmental conditions of the Gulf of Mexico, and have accepted the need for urgent action on legislation now pending in Congress, my remarks will focus upon recommendations which will help the programs in progress to go forward, and to make observations on legislation that will be coming up, which will have great impacts on the future of the Gulf of Mexico as we approach the year 2000, and look beyond.

My first observation is in regard to the failure of our nation to implement our national oceans policy, embodied in a Presidential Document, signed in March 1983. This culminated almost a decade of work, initiated in 1972, and stood in place of the U.S. signature on the Laws of the Sea, the international code for the oceans. The policy statement is true to the international code in the priority uses as stated, but did not have any means of ratification in the United States Senate. Congress was unable to pass legislation on the creation of a commission to define our ocean policy, and the agencies under whose regulation the Gulf of Mexico users fall have attempted to interpret their mandates from Congress, and their policie from the Ford, Carter, Reagan, Bush, and now, the Clinton administrations in a variety of unsuccessful ways. The guidance provided in the 700 years of history behind the international maritime law must be utilized to unsnarl the tangle of regulations, misapplication of management strategies in place of environmental action, and manipulation of laws and regulation of one agency and its constituents against another and its constituents.

In the case of the Gulf of Mexico, man has caused changes that are affecting every component of the system. After the studies of which I have been a part, I conclude that it is an integrated, single system, that functions something like a fine timepiece to sustain its rich marine life, 98% pf which are estuarine or lagoon-dependent. Each of these systems is like a gear in the mechanism, hosting its species year after year, in the life-cycles, and receiving waters from the rivers, and the Atlantic Ocean, through the Straits of Florida and the Straits of Yucatan, distributing the eggs and larvae of the annuals, providing food to the resident and migratory fish, mammals, reptiles, and birds, of the system, and the richest harvest of seafood for man in the Western Hemisphere. Right now, there are plans afoot to allow destruction of some habitat areas of the Gulf that cannot be lost, due to the interaction between the Gulf's oceanography, and its influence on weather and climate. The waters must be maintained in a clean condition, not just to support marine life, flora and fauna, but to provide the moisture for the rains, and oxygen for the atmosphere. With the interdependence on life in the coastal areas, and life in the deep ocean, and the bathemetry and physical oceanography's effects on the distribution of life, the Gulf needs to have each of its unique systems in tact to function. One cannot move the species' habitats from one system to another with any more sucess than one can break off half of the teeth in one gear of a timepiece, add that number of teeth to another gear, and expect the machine to keep good time. Much of the Gulf of Mexic system lie outside U.S. territory. The care of the Gulf must involve a high degree of commitment at the diplomatic level to assure cooperation of the governments of our neighbors to the sustainment of life in this sea. The Gulf is the Western Hemisphere's "maritime workhorse." It greatest function is to provide food, and its harvest must be protected. The harvester, in turn, must be wise and fair, an help to develop policies for management of their activities, and to assist other legitimate, compatible uses of the Gulf and its resources to be sustainable, keeping the viability of the living aquatic resources at the top of everyone's list, but always speaking out when a project or a use threatens life in the Gulf, of man and beast. If this nation commits to the sustainment of its native fisheries, the rest of the uses can be worked out, as they have been over the centuries. We must manage the special human populati our family of fishermen and mariners, who have deep knowledge of the sea and its life, and allow them guidance to the new users, the developers and the mineral harvesters, and keep the balance, so that we will avoid the practice of sacrificing one user group to the wishes of another, and throwing more animals into a dying ocean, estuaries are destroyed by pollution, development, and dregding-and-dump activity, and too much barge traffic.

Of clear threat to the viability of the Gulf of Mexico is the Galveston District U.S. Corps of Engineers' Wetlands Mitigation Banking Plan, now at Office of Management and Budget. It is not based on sound science, and is quite premature, becuase a study of the research needs of the Gulf of Mexico is just now being done. The Gulf of Mexico cannot have habitat from one system exchanged or moved with the individual systems, or species redistributed, because they are dependent upon the currents for proper distribution.

The U.S. Corps of Engineers has also announced, at a meeting in Houston, Texas, on April 1-2, "Texas Wetlands: Critical Land Use and Development Issues," their mitigation banking plan, and their intent to try to remove the 404 provision of the Clean Water Act for review by the U.S. EPA. This must not happen, for it is the mandate of EPA to preserve clean coastal waters, and is not under the direction of the U.S. Corps of Engineers.

Legislation pending before Congress on the Gulf of Mexico, one creating a commission, and one creating a flagship marine program, must be passed as quickly as possible. The problems were worked out in the last Congress, and a single bill was developed, to the satisfaction of both sides in the Senate, and this work should be retrieved, and the bills enacted.

The Clinton Administration is very responsive to needs of the Gulf of Mexico, and seems to be supporting a return to the principles of maritime law, where fisheries are recognized for their stewardship obligation, and the resource is the special population of historical, native, primitive artesan fishermen, who are constituents of their species, and have standing in ocean-use question and processes as the advocate for habitat. Animals do not have civil rights, but people do, and the population most concerned with life in the ocean and its sustainment is the native fishermen. These populations recognize the ocean's role in transportation, and have even tried to get along with the mineral harvesters. The only group that h been turned away is the commercial dumper. At the shore, the fi has tried to work with ports, harbors, and marina developers whene possible. The fishery must, however, speak out, and search for alternatives on development questions when possible, but have the courage to stand pat if the habitat cannot be lost, cannot be substitued, or cannot be rebuilt if once destroyed.

In the case of the ocean, we are our brothers' keepers, in the family of nations, and amongst ourselves. I will leave you with this thought: NOAA has its mussel watch and its projects to monitor pollution in shellfish, and EPA looks for shrimp to see if the water is still clean. These are called "sentinental species." If we apply this idea to human populations, we would have to look for our fishermen, whose families have tended the oceans across the generations. If you do not find him well, the ocean is lost. Thank you for coming to Corpus Christi, and for allowing us to speak.

Nora Deyaun Brown Boudreaux
Born in Brownwood, Texas, (Brown County,) May 18, 1943
Reared in an international setting, as the father's engineering profession took the family to many parts of the world, including Central and South America, and Asia, as he worked on internationally-funded projects and developements relating to infrastructure for economic development, such as roads, bridges, air fields, and hospitals, for trade and humanitarian purposes.

Earned BA from the University of Texas at Austin in 1965, with a major in Romance Languages.

In professional life, taught Spanish, French, and English in the public schools of Texas, and served as an elected official of the State of Texas for almost 12 years as a Trustee of the Point Is Independent School District, which is almost totally dedependent upon a marine-related economy for it funding: commercial shrimp harvest and its job-linked payroll, recreational fishery capture-hunt, tourism,and related business, and off-shore mineral production. Other assets are related to the two ports and fishing harbors that lie within the district.

In business, has been an officer of family-owned corporations related to a fifty year-old enterprise of seafood production from marine waters of the Gulf of Mexico, and was one of several owners of an art gallery for almost 5 years.

Membership in professional organizations: served as a officer of the Business and Professional Womens Club, of the Delta Kappa Gamma Society of women educators, chairman of the regional Rio Grande Valley Council for the Arts; on Cameron County Commission on the Status of Women; Child Welfare Board; Historical Commission; Arts Commission; and a representative to Lower Rio Grande Valley Development Council. Past President of Port Isabel Rotary Ann's, and a past member of Texas Press Women.

Environmental work has included representing Texas Shrimp Association on the Boards of Gulf Coast Coalition for Public Health, Texas Environmental Coalition, appointee of the State of Texas to the Gulf of Mexico Program Citizen Advisory Committee, representing fisheries and habitat.

In process with Congress and State since 1983, currently is professionally employed as Environmental Director of Texas Shrimp Association,arepresenting the association, a non-profit steward/harvester group chartered in accordance with maritime fishery law to work anywhere in the Western Hemisphere, in 1950. Represents TSA on the following:
Habitat Advisory Panel for Texas, Gulf of Mexico Fisheries Management Council

Citizen Advisory Committee, Gulf of Mexico Program

Living Aquatic Resources Subcommittee, Technical Steering Committee, P.2, resume, Boudreaux, TSA

Gulf of Mexico Program, (NOAA/NMFS led)

Integrated Border Environmental Plan Public Advisory Committee, to the Administrator of EPA, representing the Gulf of Mexico

South Texas Space Consortium (marine application of remote sensing)

818 Study of the Rio Grande, Texas Water Commission

Lower Rio Grande Valley Development Council Environmental Resources Committee

Subcommittee of ERC of LRGVDC on Water Quality

319 Texas Water Commission Steering Committee (pilot projects) for the Rio Grande, the Arroyo Colorado, and the adjacent lagoon, bay, and marine waters.

Deyaun married Ronald Joseph Boudreaux is Austin, Texas, in 1965, and the couple has two daughters, Cherie B. Camacho, and Nicole Marie Boudreaux, both students at University of Texas-Brownsville, and one grandchild, Ronald Paul Camacho. All reside in Laguna Vista, Cameron County, Texas.

Page A2 — Friday, May 21, 1993 VALLEY MORNING STAR, Harlingen, Texas

Local

Fishermen disgruntled as snapper season ends

By MARK WAITE
Star News Staff

PORT MANSFIELD — With the commercial red snapper season closed as of midnight tonight, fisherman Corky Cobb said he had little choice but to throw his catch into the harbor.

Federal law prohibits the catching or selling of red snapper by commercial fishermen for the rest of the year. The commercial season closed 94 days after it opened Feb. 15. The closing took effect when the commercial quota of 3.06 million pounds was reached.

New trip limits allowed fishermen with a red snapper endorsement a maximum of 2,000 pounds per trip. Those fishermen had to prove they harvested 5,000 pounds of red snapper in two of the past three years. All other holders of commercial reef fish permits were restricted to 200 pounds per trip.

Cobb said the two buyers of red snapper in the area are oversupplied with fish.

"I got 4,000 pounds of snapper on hand and I'm trying to sell them and I can't sell them other than trucking them to Corpus. I imagine I'll just have to throw them in the harbor," Cobb said. "They're getting a lot of snapper out of Mexico now and they don't want ours."

The red snapper harvest is divided up 51 percent into the commercial quota and 49 percent into the recreational quota. Recreational fishermen have a daily bag limit of seven red snapper, but their annual quota has never been reached.

Last year the commercial red snapper quota was reached in just 58 days during February when a 2.04 million pound commercial quota was reached. After protests from fishermen, the season reopened in April for six weeks with a trip limit of 1,000 pounds.

"The catch rates went down somewhat. The average daily (catch) ran into about 70 percent of what it was last year," said Gulf of Mexico Fishery Management Council biologist Steve Atran. "There was pretty intensive fishing over the first five weeks ... but it dropped over the last four or five weeks."

"By the time it (the season) opened up and it opened up late, the weather killed us," Cobb said. "When the weather was decent you could go out and catch fish. But the weather killed you bad."

Atran said 131 fishermen had endorsements allowing up to 2,000 pounds per trip out of about 2,200 fishermen with commercial reef fish permits.

"The last stock assessment which was done last year indicated there has been some increase in spawning potential ratio but we still have a long ways to go," Atran said.

Mexican shrimpers: Ban will take food from the mouths of children

By TONY VINDELL
The Brownsville Herald

MATAMOROS — Mexico's first seasonal ban on commercial shrimping began Thursday — if the local and state offices of the Department of Fishing enforce it.

The ban, designed to let the small Mexico Gulf white shrimp reach maturity, has been drawing heated criticism from the scores of fishing cooperatives along the Tamaulipas Gulf Coast.

Environmentalists believe the ban is needed to protect to valuable shrimp crop, and possibly save the species from extinction.

Thousands of Mexican families make their living from shrimping, from the Lower Laguna Madre to the Bay of Campeche and in the deep waters of the gulf. The profession, and the valuable equipment of a shrimper, is often handed down through generations of a family.

Thousands of impoverished families migrate to Tamaulipas from the southern gulf states of Veracruz, Campeche and Quintana Roo to catch shrimp. Many fall pray to unscrupulous cooperative leaders who pay them meager salaries while demanding stiff membership fees and personal favors.

Around El Mezquital Port, an hour south of Matamoros, the dozen largest fishing associations control hundreds of residents of cooperatives such as Islas Unidas, Las Higuerillas, La Capilla, Barrancon, Chamizal and Caudillo.

Fishermen affiliated with the cooperatives say they get paid from 250 pesos — roughly 8 U.S. cents — to 10,000 pesos, or $3.33, per pound of shrimp.

"The more we catch, the less we get paid," said Vicente Patino Ramirez.

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would be prohibited from taking the exam.

Lucio also agreed to require the school to apply for accreditation by the end of this year. If it does not, the extension to take the bar expires.

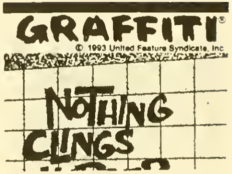
Additionally, the school must file quarterly reports with the Texas Board of Law Examiners on progress it is making toward accreditation.

About 50 students attend the school.

The measure also allows students at the unaccredited Wesleyan Law School in Irving to take the exam. About 750 students are enrolled there.

Correction

The Harlingen High School band presented its concert Thursday evening. *The Valley Morning Star* incorrectly reported that the concert was tonight. *The Star* regrets the error.



Testimony of Mary Lou Campbell for Lone Star Chapter Sierra Club
House Merchant Marine and Fisheries Committee
Subcommittee on Oceanography, the Gulf of Mexico and the Outer Continental Shelf
Corpus Christi State University, Corpus Christi, Texas
Friday, April 23, 1993. 9:00 a.m.

The Honorable Solomon P. Ortiz, Chair

My name is Mary Lou Campbell. I live on South Padre Island and own an art gallery in Port Isabel. I am a volunteer. This means although I speak for Sierra Club, I am not an employee of the Club.

We are here today to talk about the Gulf of Mexico. As you are members of this committee, I know that you must be aware of the immense social and economic value of the gulf. The Gulf of Mexico has a rich historical background. The broad sandy beaches were used as roadways when the first Europeons set foot on our shores long before the locomotive and the automobile. In fact, the Texas Open Beaches Act, the act that guarantees to the public the right of lateral movement and access to the beaches of Texas, has its basis in that historical movement of men, animals and supplies.

I believe you acknowledge that the Gulf of Mexico is threatened and endangered. Many have or will testify to the processes whereby the gulf has become contaminated and at risk. Just this week, a report was issued by the American Rivers organization listing the Rio Grande as the North American continent's most endangered river. The Rio Grande, of course, a tributary to the gulf, carries its burden to pollute that body in turn. There are other rivers that may be just as dangerous that also enter the gulf. The Mississippi, draining thirty-three of our United States comes immediately to mind. The Rio Panuco and Usumacinta of Mexico have undoubtedly not been tested to any great extent. It is interesting to note that when one inquires about the specifics of the pollution of the Rio Grande, one is told there are no base line studies by which to measure.

Many agencies Federal, State and private are now trying to remedy this omission. The International Boundary and Water Commission which has the oversight for water quality in the river has seemingly chosen not to exercise this option in the past.

The heightened interest in the Mexico-United States border brought about by the North American Free Trade Agreement negotiations has served to bring much attention to the Rio Grande. We who live and work in the Valley are most concerned that the only source of domestic water for millions has been allowed to deteriorate from that once pristine stream that rises in the Colorado Rocky Mountains. This is the water that we drink, bathe our children in, irrigate our food crops. It is important that strong enforcement measures for the proper disposal of domestic and industrial waste be written into the NAFTA as well as strong clean air language. Little is said about the impact of the agreement on the gulf, yet it too, is one of our borders. This omission should be corrected.

The rivers contribute to the life of the Gulf of Mexico and the beaches, lagoons, estuaries and wetlands systems which surround it. The rivers carry fresh water to the gulf. The rivers serve as nurseries and as food supplies for many marine and marine dependent species. The rivers are a source of sand. With the damming and channelization of the tributaries, the nourishment for the beaches was cut off. The beaches of the gulf can no longer count on the rivers in their sand budget.

The coastal barrier islands are dynamic, ever-changing and moving. Man calls this process erosion. But, it is a natural process. It would not even be of concern were it not for the actions of man. Nature has as much use for one sand bar as another, for that is what the coastal barriers truly are, barrier bulwarks that are thrown up to protect the main land. Man, through his action of building on the barrier islands and the constuction of solid so-called erosion control structures has changed the natural flow of sand and endangered the coastal barriers and the lands they guard.

The Congress has showed itself to be aware of the dangers by passing the two Coastal Barrier Resources Acts, the latest in 1990. The Coastal Management Act is another important tool in both educating the public to the importance of our coasts and in formulating specific regulation.

The erosion response structures usually sponsored by the Army

Corps of Engineers at worst contribute to the problem of coastal erosion at best are only an expensive stop-gap measure. Sea level rise is another factor that must be taken into account in management of both beaches and wetlands.

Oil spills and petro-chemical disasters are a perpetual threat to the life of the Gulf of Mexico. We all remember the impact of the blow-out of Ixtoc I in the Bay of Campeche. Fortunately, there was time to prepare and the expected damages to the lagoons and estuaries did not occur. However, the tourism and commerical fishery were imperiled. Stronger regulations as to the building of barges and tankers are in order. Good progress is being made in the area of oil spill response in so far as having readily available supplies at sensitive points along our coasts. The bays and estuaries must be protected on a stand-by basis for immediate response. We certainly should have learned from the Exxon Valdez episode.

The Gulf of Mexico is vitally important to our country. Five states border the Gulf and enclose it on three sides. The Gulf of Mexico is also bordered by Mexico, Cuba and certainly it impacts and is impacted by the Caribbean rim countries. We must strive to work more closely with the states and countries in order to clean up and protect the gulf, that has most aptly been called, "America's Sea."

Thank you for coming to Corpus Christi. We thank you for the opportunity to testify.

Testimony Submitted by

Richard J. Williams

President

WIMPOL, Inc.

on behalf of the

National Ocean Industries Association

before the

Subcommittee on Oceanography, Gulf of Mexico and OCS

Committee on Merchant Marine and Fisheries

U.S. House of Representatives

Corpus Christi, Texas

April 23, 1993

Good morning, Mr. Chairman and members of the Subcommittee. Thank you for inviting me here today. My name is Richard Williams and I am President of WIMPOL, Inc., a positioning, hydrographic, marine geophysical and applied oceanographic service company based in Houston. I am here as a Director of the National Ocean Industries Association, or NOIA, the only national trade association that represents all facets of the domestic offshore oil and natural gas industry. NOIA's 300 member companies are engaged in construction, diving, drilling, finance, geophysical exploration, service and supply and production.

Attached to my written statement, which I will summarize, is a copy of an article from the May 1992 issue of Offshore Magazine. This article shows the balance between development of offshore resources and environmental protection of unique marine areas. The area discussed in the article is the Flower Garden Banks National Marine Sanctuary offshore Texas. Mobil has a production platform about one mile from the East Flower Garden Bank, causing no harm at all to the coral reefs. In fact, earlier this month, Mobil won NOIA's Award for Excellence in Environmental Conservation for its Cooperative Research Program. Through this program, Mobil utilizes its facilities, including the platform at the sanctuary, for research and monitoring purposes. Mobil arranges transport for and houses government and private scientists who monitor and study the environmental effects of offshore oil and gas operations. We at NOIA feel that this is an excellent example of industry working with the government and academia to ensure the protection of unique marine environments while safely developing oil and natural gas offshore.

I appreciate the opportunity to testify as to the federal government's role in America's Sea, the Gulf of Mexico, and how it could better apply and coordinate its research and programs to sustain and develop environmentally compatible uses.

One opportunity for improving federal research and related Gulf of Mexico program efforts is increased utilization of the valuable expertise and capability that resides in the private sector. An encouraging concept now under consideration at the National Oceanic and Atmospheric Administration's (NOAA) National Ocean Service is their interest in contracting for acquisition of coastal geodetic survey data. NOIA believes such a concept can and should be expanded. Through such a public-private partnership approach, technology transfer between the federal government and private industry can provide benefits for both, a needed dialogue between the service and research components of the federal agency can be established, and most importantly, the Department will be able to reduce federal administrative and personnel costs while promoting economic and environmental progress. NOIA members created and perfected many of the technologies that have provided safer, more accurate bathymetry, surveys of the sea floor, sediment characterization and physical and chemical oceanographic modeling. We would welcome the opportunity to work with the National Ocean Service and other federal agencies active in the Gulf of Mexico in this capacity.

There also is a pressing need by NOAA for updated charting information to improve navigational safety. The offshore industry has the technological resources and expertise to meet this urgent demand. Industry has developed and continues to refine and improve full coverage survey technologies, including side-scan sonar and shallow water multibeam survey systems. These and other similar technologies provide a valuable resource to the federal government and the users of the Gulf of Mexico.

Another way in the which the federal government can better apply and coordinate its research and programs for the improvement of the Gulf of Mexico is by assisting in the development, recognition and application of new and emerging technologies. One example of this is the development of synthetic, biodegradable, extremely low toxicity drilling fluid systems. To date the new drilling fluid technology has been employed successfully in overseas projects, satisfying operational requirements, enhancing environmental responsibility and affording a cleaner, safer workplace. Yet, even with strong scientific support for its use, existing domestic regulations and policies hamper the realization of this technological benefit by our own companies, environment and people. This technology was created in the United States by U.S. companies, but we are not able to get a permit for its use here at home. In fact, the federal government has failed to recognize its benefits to the marine environment and its application to offshore operations. Other countries, such as Norway and the United Kingdom, are able to reap the benefits of this technology while we and the Gulf of Mexico are not.

Adequate and proper funding of offshore studies programs is another way the government can contribute to a better Gulf. The MMS Environmental Studies Program (ESP) needs more money to carry out its responsibilities. The National Research Council states that "In recent years, ESP budgets have been barely adequate at best to conduct needed studies in a timely and efficient manner to meet the demands of the OCS leasing schedule. Recent budgetary decisions have hampered the program by reducing funding in the face of increasing demands that the ESP meet its mandate."

The execution and full conclusion of these studies is important. One cited reason for halting development of offshore oil and natural gas resources is the lack of scientific information necessary to make intelligent leasing and development decisions. Completion of these studies will prove again the offshore oil and gas industry can and continues to perform its job in a way that does not pose an undue risk to the environment.

Another program that needs additional funding this year is the Gulf of Mexico Air Study. The Clean Air Act requires that MMS complete this study by November of 1993. The goals of the study are to determine if offshore petroleum operations contribute significantly to ozone episodes in onshore areas of the Gulf. The study is funded at approximately 5.5 million dollars. Up to one-half of this will fund air quality and meteorological data collection during the summer of 1993. The remainder will support photochemical modeling of the study area using the collected data. Industry has voiced strong concerns that the data collection effort for such a large study area is critically under-funded. It has been estimated that an additional three to four million dollars is necessary to adequately support the study.

In conclusion, I want to express my pleasure with the existing working relationships among all of the federal agencies with responsibilities in the Gulf of Mexico. We look forward to opportunities to work with these agencies and provide input where it will be helpful. Last year's efforts between NOAA and Texaco on Texaco's pipeline project near the Flower Garden banks is just the latest example of how economic development and environmental protection are not mutually exclusive when we work together.

I will be happy to answer any questions you may have.

Historic data on Gulf of Mexico reef shows compatibility with drilling, production

Regulation of Flower Gardens helps protect fragile US marine environment

Dr. Steve Gittings
Flower Garden Banks
National Marine Sanctuary
(US–NOAA)

Can hydrocarbon reservoirs be tapped near sensitive ecosystems without jeopardizing the integrity of the environment at the same time? The response to this question depends on who is asked. The answer, however, demands clear thinking, the input of environmental science, and monitoring. Too often, decisions on whether or not to develop an area rely on none of these.In some cases, it is clear that development has resulted in significant environmental modification. Such has been the case n a number of wetland areas. In other cases, development has been blocked primarily because of vociferous opposition by an environmentally sensitive public.Unfortunately, those who oppose development often do so without considering the possibility that development and resource protection might be compatible under certain curcumstances. While responses to the question of compatibility between development and environmental health are easily obtained, the question itself is, unfortunately, not always debated in a sensible manner.

Escalating development on the outer continental shelf of the northwest Gulf of Mexico in the 1970s coincided with the first rigorous examinations of the unique biological communities on a number of offshore banks in the region. The two were linked, however, because the US Minerals Management Service (MMS) (then part of the Bureau of Land Management), which regulates offshore development, recognized hat some of the banks harbored sensitive tropical marine communities.

Reef communities

Such communities require stable environments and do not tolerate unfamiliar changes in water quality. They would be especially vulnerable to the effects of unusual levels of sedimentation by drill mud plumes and to other discharges that might degrade water quality. MMS funded studies which employed submersibles, scientific diving, and geological and physical oceanographic tools to characterize the environment and conditions on and around the banks.

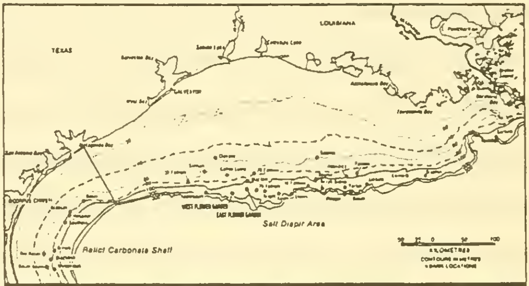


Figure 1: The two Flower Garden reefs are among a number of seabottom features in the Gulf of Mexico considered biologically important.

Much of the effort in the late 1970s centered on two particularly unique banks on the shelf-edge, the East and West Flower Garden Banks. The features contain well developed coral reefs on their summits (55-65 ft).

These reefs extend to depths of over 120-ft deep, but are quite limited in area. On the East Bank, the highly diverse coral reef occupies roughly 250 acres; on the West Bank, 100 acres. In the 120-170 feet range, the bottom is dominated by a low diversity coral community. Below this, extensive plateaus and gentle slopes – many times larger than the reefs themselves – are composed of coralline algae pavements, algal nodules, sponges, and other bottom-dwelling animals and plants to a depth of over 270 ft.

Communities dominated by deep-water sea fans, sea whips, sponges, solitary hard corals, and crinoids exist on the lower reaches of the banks above about 300 feet. Ancient reefs, long-since drowned by rising sea levels, also occur on the deeper portions of the banks, and remind us that the world changes, even without human help.

Leasing restrictions

In 1972, MMS developed lease stipulations in areas around a number of banks, including the Flower Gardens, in order to protect them from damage. At the Flower Gardens, a "No-Activity Zone" out to approximately 100 meters depth prohibited all industry activity.

A "1-Mile Zone" beyond the "No-Activity Zone" was established that required shunting of drill cuttings and discharges to within 10 meters of the seafloor. It was determined that the local currents at these depths would preclude sediments and other discharges from reaching the shallow reef communities.

Monitoring studies were also required in conjunction with drilling in this zone. A "Four-Mile Zone" was established in which shunting was required, but not monitoring.

One of the goals of research in the mid to late 1970s was to develop scientific techniques to allow researchers to quantitatively monitor critical aspects of the unique reefs on the Flower Garden Banks. Coral populations, cover, diversity, and coral growth rates were studied in detail as early as 1978. Data collected then were gathered in much the same way as is done today, allowing long-term comparisons. Unlike the Flower Gardens, few reefs in the world have had the luxury of sustained, long-term, and standardized data collection.

Data collection

In 1981, Mobil placed a platform in a position approximately one mile southeast of the shallowest portions of the East Flower Garden Bank, just outside the "No-Activity Zone." A contract for environmental monitoring was awarded to Continental Shelf Associates (Tequesta, Fla).

Subcontracts were awarded to scientists at Texas A&M University (College Station), mainly for the coral studies. The monitoring efforts included studies on drill mud content, discharge fates, sedimentation, current patterns, water quality, bioassays, coral populations, coral growth, and recruitment (larval settlement).

Monitoring showed that discharges of drilling muds did not reach the coral reef zone on the East Bank, just over a mile to the northwest, and no data showed any immediate effects on corals.

Coral community monitoring ended in 1982, following the completion of nine wells by Mobil. In 1988, Union placed a platform in the "Four-Mile Zone" of the West Flower Garden Bank. By this time, monitoring requirements had changed substantially and focused primarily on measurement of coral populations and growth rates. CSA was again awarded a contract to conduct monitoring, and established a permanent monitoring station measuring 100 meters by 100 meters on the top of the West Bank. Within this area, 40 one-meter tall posts were implanted in the reef rock to permanently mark repetitively photographed sites eight sq meters in size.

Bolts and nails were installed to mark 120 repetitively photographed coral margins to monitor encrusting growth rates, and spikes were driven into the tops of 30 coral colonies to monitor upward coral growth. Coral populations, cover, and diversity were measured using random transect photography, a method used in earlier studies on the banks.

In late 1988, Texas A&M was awarded a three-year contract by MMS to continue the monitoring study on the West Bank, and also to establish a comparable study site on the East Bank. Since that time, monitoring cruises have been conducted twice a year, the most recent having been in September 1991.

Few changes

In the time since monitoring studies at the Flower Gardens began, no statistically significant changes have been documented that might be attributed to increasing hydrocarbon development in the vicinity of the banks. Coral populations and cover have not changed measurably.

Coral growth rates have remained enviable, even by tropical standards. Coral reproduction has been documented by studies using artificial settlement plates and by observations of mass spawning of corals in 1990 and 1991. Mass spawning is the synchronous release of eggs and sperm by multiple coral species. The phenomenon is frequently observed on Pacific reefs, but comparable observations elsewhere in the Atlantic are limited.

Studies of long-term water quality changes that may be recorded in the skeletons of coral colonies are ongoing. Data increasingly suggest that the Flower Gardens contain fully functional, well developed, healthy, and pristine coral communities. This is not to say that changes have not been documented on the reefs.

- **Urchin die-off:** Between 1983 and 1984, nearly all the black-spined sea urchins in the Western Atlantic and the Gulf of Mexico died. This sea urchin was a very important herbivore, and consumed algae that might otherwise crowd and smother corals and other bottom-dwelling animals.

On some Atlantic reefs, algae cover rose dramatically following the die-off, and coral cover dropped significantly following the mass mortality. At the Flower Gardens, algae cover rose from very low levels to over 14% in less than a year, but coral cover did not appear to change.

Figure 2: A diver is shown conducting studies at a monitoring station in the Flower Garden Banks used to determine reef condition. Most of the damage on the reef has come from unrestricted anchoring. (Photo by G.S. Boland)

Algae cover diminished after 1985 and has remained relatively low since then. Recently, video data have shown an increase in one species of parrotfish that consumes algae. This may have been the result of the sea urchin die-off and may explain the lack of continued high algae cover on the reefs.

- **Coral bleaching:** Coral bleaching occurs when stressed coral colonies expel internal, symbiotic algae (called zooxanthellae) that typically recycle wastes, enhance growth, and simplify food production. Under normal conditions, corals get their greenish brown color from these symbionts. During stressful events, which can be caused by unusually high or low temperatures, high or low light levels, exposure to air, excessive sedimentation, and other factors, corals expel the algae. This results in a bleached, white appearance.

Coral bleaching was observed to some extent every summer between 1989 and 1991. The most significant event occurred in 1990. This coincided

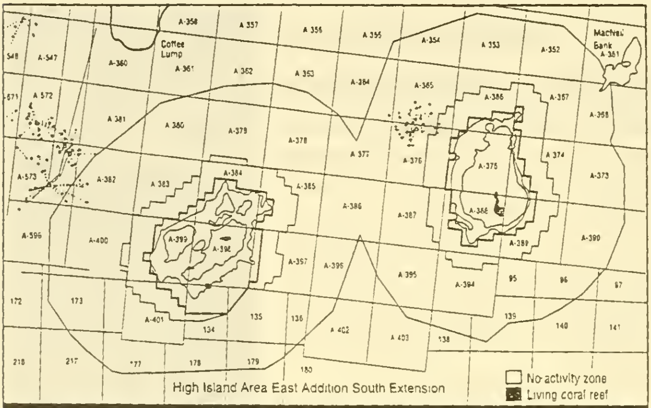


Figure 3: No-activity zones have been set up by the US Minerals Management Service for the reef areas. The reef was monitored in past years when drilling and production activity took place nearby.

with, and is thought to have resulted from, unusually high summer temperatures that year. Nevertheless, no significant mortality occurred and colonies generally appeared to completely recover their algae populations within several months of bleaching.

Both the mass mortality of sea urchins and coral bleaching are thought to have been natural phenomena. Both have been observed in many areas of the Atlantic and Gulf of Mexico.

It is highly unlikely that hydrocarbon production in the region had anything to do with either event. Nevertheless, human impacts on the coral communities at the Flower Gardens have been documented.

- **Anchoring damage:** On several occasions, large vessels have been seen at anchor on the banks. Side-scan surveys have shown evidence of enormous anchor scars, no doubt from tankers, or other floating vessels, on some of the deeper portions of the banks.

Small boats frequently anchored on the reefs before the installation of permanent moorings in 1990 by volunteers from the Gulf Reef Environmental Action Team (GREAT) and other anizations. All these anchoring inci- s caused mechanical damage that can take many years to heal. Other evidence of humans include discarded chains and cables, and lost anchors.

A number of industry vessels have also contributed to the problem. Anchoring on the shallow reefs saves time and effort, and crews often take time to fish while at anchor. Ironically, fishing is poor in the coral reef zones of the Flower Garden Banks. The best fishing (snappers, groupers) is on the deeper reaches of the banks (over 150 feet).

Human pressure

It is becoming more evident that a wide range of human activities can be blamed for the demise of many nearby habitats, including coral reefs. The viability of reefs at the Flower Gardens is, no doubt, due in part to their remote location. They are over 100 miles from shore and out of range of most human influence, particularly problems caused by excessive coastal development.

No one knows what the Flower Gardens might look like today without the regulations imposed on drilling operations around the banks. It is possible that discharges at the ocean surface would have settled to the reefs and smothered corals.

Toxic components of some discharges could have caused the death of plants and animals, increases in disease incidence, or other signs of environmental stress. Unrestricted anchoring by industry and other vessels would almost certainly have affected the small reefs.

Proper regulation

But restrictions were imposed. And by all indications, they have been effective. So, on the basis of data obtained over the last two decades at the Flower Gardens, the question of compatibility between development and resource protection can perhaps be answered in this way. Properly regulated, development can proceed in some sensitive environments.

In January 1992, after 20 years of effort to protect the reefs, the Flower Garden Banks were officially designated the Nation's tenth National Marine Sanctuary. Regulations imposed by MMS on the oil industry are still in effect on and around the banks.

The Sanctuary is administered by the National Oceanic and Atmospheric Administration. This new status now enables regulation of non-industry related activities, such as vessel anchoring and mooring, discharges by vessels, collection or injury of marine organisms, and commercial and recreational fishing. It is also hoped that the Sanctuary status will encourage and facilitate continued research and monitoring on these unique and spectacular reefs. ◘

AUTHOR

Dr. Steve Gittings is the manager of the Flower Garden Banks National Marine Sanctuary (US National Oceanic and Atmospheric Administration). From 1980 to 1992, he conducted research at Texas A&M University. He has also participated in deep-sea investigations of oil seep related animals, and has considerable ROV and submersible experience. Recent projects include ship grounding damage assessments, coral reef monitoring, and studies of coral reproduction, bleaching, and the use of DNA sequencing for investigations of coral dispersal and gene flow.

STATEMENT OF
VERNON BEHRHORST, EXECUTIVE DIRECTOR
GULF INTRACOASTAL CANAL ASSOCIATION
TO
U.S. HOUSE OF REPRESENTATIVES COMMITTEE ON MERCHANT MARINE AND FISHERIES, SUBCOMMITTEE ON OCEANOGRAPHY, GULF OF MEXICO AND OUTER CONTINENTAL SHELF, CORPUS CHRISTI, TEXAS, APRIL 23, 1993

The Gulf Intracoastal Canal Association (GICA) is grateful to you, Congressman Ortiz, for the invitation to participate in this hearing. GICA was organized in Victoria, Texas in 1905 for the purpose of promoting the construction of the Gulf Intracoastal Waterway (GIWW). When it was completed in 1949, GICA's mission was directed to insuring that the GIWW will be continually operated, maintained and improved to furnish safe, economical and efficient shallow-draft water transportation between Gulf Coast states and other regions of the country.

I am providing with this statement a print of GICA's video, *Divided Waters - The Connecting Link*, which gives the history, development and contribution of the GIWW to our Nation. It was produced by Legend International Films in association with Louisiana Public Broadcasting and selected for distribution to all PBS and instructional television stations nation-wide. You may view it at your leisure. Therefore, I will not discuss the GIWW in detail.

We were requested to address, "the Federal Government's role in the Gulf of Mexico, and how it could better apply and coordinate its research and programs to sustain and develop environmentally compatible uses of the Gulf of Mexico."

Coordination among federal agencies and between federal and state agencies is at times difficult to achieve. I have been involved in this area of coordination most of my professional life, during which there have been many failures and some successes. I am privileged to be a part of one very recent success. This past Saturday in New Orleans, cost-sharing agreements were signed for the first ten projects to be constructed under the authority of the Coastal Wetlands Planning, Protection and Restoration Act. The Federal Government will provide 75% of the funding while the State of Louisiana will provide 25%. All federal agencies with responsibilities for coastal wetlands are involved in this highly coordinated effort along with the State of Louisiana. It took time, but it is working.

These projects are very important to the Gulf of Mexico as it is the fringing wetlands that are the source of the biological vitality of the Gulf. The greatest share of these coastal wetlands are in Louisiana, and what happens in Louisiana effects the entire Gulf of Mexico. The legislation establishing this program, sponsored by Committee member, Congressman Billy Tauzin, and Senators Breaux and Johnston, should be considered as a model for similar programs all along the Gulf Coast.

One of these projects is to stabilize the banks of the Gulf Intracoastal Waterway within the Cameron Prairie National Wildlife Refuge. I was involved in the initiation of this project, bringing wildlife and navigation interests together. We are working on similar projects elsewhere on the GIWW.

Here is Texas we have a cooperative erosion control project that has been given national recognition. The GIWW passes through the Aransas National Wildlife Refuge, winter home of whooping cranes, the birds most symbolic of endangered species. The Texas Waterways Operators Association working with the U.S. Fish and Wildlife Service, the Corps of Engineers and many volunteers undertook a project to stabilize the GIWW shoreline in critical areas of the refuge. It was a successful, coordinated program.

The Gulf Intracoastal Waterway extends a distance of 1,200 miles from St. Marks, Florida to Brownsville, Texas. At New Orleans, where the GIWW intersects the Mississippi River, is the most important waterway crossroad in the world. The GIWW also connects with the Tennessee-Tombigbee Waterway at Mobile and other waterways along the coast making low-cost water transportation available between points all along the Gulf coast and the interior of the United States (see attached map). The GIWW passes through wetlands fringing the Gulf of Mexico for its almost its entire 1,200 miles from Florida to Texas.

In 1991, the GIWW carried a near record 116 million tons of cargo, 82 million of it, valued at $24 billion, were transported on the GIWW here in Texas. The GIWW is extremely important to Texas, and Texas is a partner in the GIWW as are the other Gulf Coast states and counties, parishes and navigation districts within these states. (For more detailed information see sources listed at the end of this statement.)

For the GIWW to remain a viable, safe waterway, it must be properly maintained, including dredging and eliminating hazards that damage vessels and shoreside property and pollute the waterway. To do this, extensive and sustained coordination and cooperation among federal agencies and with state agencies are essential.

In the case of the GIWW, and other improved navigable waterways in the United States, the Federal Government constructed the waterway and assumed the responsibility for its operation and maintenance, while non-federal interests, as their part of the agreement, provided the land, easements, rights-of-way, relocations and disposal areas for dredged material. Here in Texas, the State of Texas, through the Texas Department of Transportation, is the non-federal sponsor of the GIWW. In other Gulf states, counties, parishes or navigation districts are usually the non-federal sponsors.

Absolutely essential for operating, maintaining and improving the GIWW is the provision of adequate and environmentally acceptable dredged disposal areas, and, where possible, using dredged material for beneficial purposes. Unless these areas are secured, and secured in a timely manner, maintenance can not be accomplished, safety will be in jeopardy and the waterway may have to be shut down. Many federal and non-federal agencies are involved. Here in Texas a special advisory committee composed of federal and state agencies, chaired by the Texas Department of Transportation, meets monthly to assist in the coordination of acquisition of disposal areas and find beneficial uses of dredged material.

There is an increasing demand for upland disposal rather than using open water disposal of dredged material. At times this demand can not be met because the land needed is privately owned and prolonged negotiations are required in acquisition, if the owner is willing to sell or grant and easement at all. Where land is available, it may be at too great a distance to pump the dredged material with the funds available.

This dilemma must be resolved, otherwise safe navigation will become impossible to provide at a reasonable cost and coastal wetlands will be in jeopardy. Acceptable open water disposal and marsh building techniques must be further developed. Much is already being done by the U.S. Army Corps of Engineers Waterways Experiment Station, other federal agencies, state universities and private businesses. We must evaluate what research is being done, coordinate these efforts, and insure that the products of this research are quickly made available.

Additionally, agreement must be reached among agencies on rational criteria for use and placement of this dredged material - its economic cost and impact, beneficial and adverse, upon both humans and wildlife. All must recognize that ideal sites and uses of dredged material may not exist in reality all along the Gulf Coast. Coordinated decisions will have to be made, and made in a punctual manner. This requires a sincere effort on behalf of federal and state agencies and private interests.

Moreover, agreement among Gulf Coast states' requirement for pollution abatement, protection of wetlands and mitigation must be achieved. I cite two examples where problems are occurring.

All Gulf Coast states have approved coastal zone management programs (CZM) except Texas, which is now seeking NOAA approval of its program. CZM legislation provided for states to implement and enforce regulations that may be more stringent than adjoining states. They are enforced through the "consistency" provision of the CZM Act. Maintenance of waterways in the coastal zone by the Corps of Engineers is subject to each states different consistency provisions. Of great concern is that state interests may become overriding on interstate navigable waterways where the predominant interest is national.

Allowing state criteria and regulation more stringent than those used by the Federal Government was included in the Oil Pollution Act of 1990. On the Gulf Coast, Florida's liability requirements allowed under OPA'90 are so severe that some towing companies have ceased operations in that state. Geography diminishes the national interest impact in this case because Florida is on one end of the GIWW. But what if Louisiana, in the middle of the GIWW, would have done this instead of Florida? How could barges carrying gasoline, chemicals, fertilizer steel and sugar move between ports and terminals in Texas and those as far away as Pittsburgh and Minneapolis on the Ohio and Mississippi Rivers?

This subcommittee is examining the need for coordination of federal research and federal programs. These problems which I have just mentioned are being encountered because they have developed through federal programs. They are of interest to this subcommittee.

Last Saturday was Earth Day. In my home state of Louisiana wetlands loss due to erosion, subsidence, and salt water intrusion was again highlighted. At the beginning of this statement I mentioned two instances of erosion on the GIWW and how they are being addressed. There are many others along the Gulf Coast. Recently the State of Florida informed the U.S. Army Corps of Engineers that future maintenance of the GIWW in an eighteen miles reach, known as the Grand Canyon, is contingent upon stabilizing the banks of the waterway.

Of great concern to the people here in Corpus Christi is the rapid erosion that is occurring at Sargent Beach, threatening to sever the GIWW at that point. Seventeen million tons of commerce, most of which has its origin or destination in Corpus Christi or Brownsville, will no longer be able to move on the GIWW if this should happen. We now have a project authorized to prevent this happening. We pray that a hurricane, or even a severe storm, does not sever the waterway before the project is in place. This project must be expedited.

At Sargent Beach the erosion is occurring from the Gulf of Mexico itself, not on the banks of the GIWW. GICA is very concerned about Gulf shoreline erosion because it also threatens the barrier islands which extent along much of the Gulf Coast. Except for the reach between Galveston Bay and the Mississippi River, the GIWW passes through lagoons behind these barrier islands along its 1,200 mile length. The integrity of the GIWW is linked to their remaining intact.

We have employed diverse techniques to maintain these barrier islands; some have worked and others have not. Because of the importance of these barrier islands for many purposes, all interests, including the Federal Government, must support research on additional and more effective means of preserving them. The Federal Government has a direct vested interest as many of these barrier Islands are in our National Seashore System, including most of Padre Island a few miles from here.

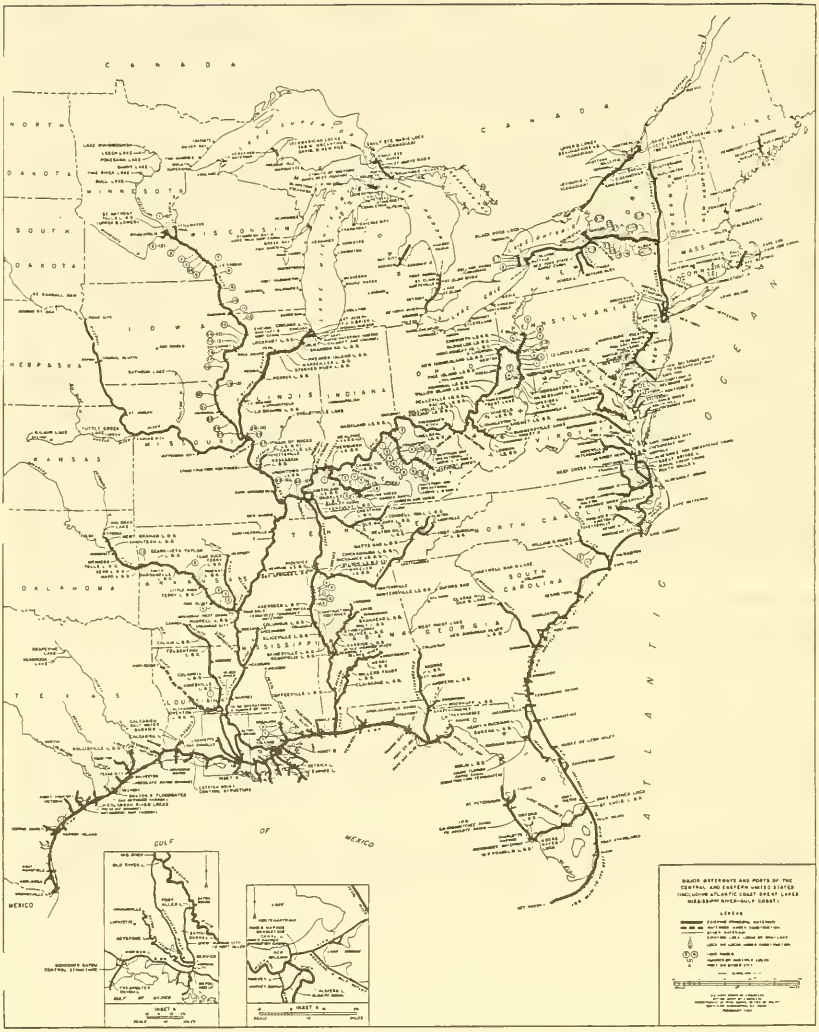
Congressman de la Garza in the House and Senators Gramm and Krueger in the Senate have introduced Gulf of Mexico legislation to help coordinate diverse interests in the Gulf. Navigation, in both the open Gulf and on the GIWW, is one of these interests. This interest, with regard to the GIWW, is spreading to Mexico where construction of a Gulf Intracoastal Waterway to connect with that of the U.S. at Brownsville is being considered. This is not a new proposal. It is as old as the dream of a GIWW in this country. The impetus to move forward with this plan has been provided by the prospects of NAFTA being ratified.

GICA has established a task force which has been working with our counterparts in Mexico for several years. A very productive meeting was held recently in Mexico City, and great interests is being developed in the coastal states of Tamaulipas and Vera Cruz and well as the capital. GICA's role is that of a facilitator. We provide this function as no formal relationship has yet been established between the U.S. and Mexican governments on this undertaking. This proposal must be a concern of yours. I am enclosing a paper I have prepared giving GICA's views. Additional information will be provided if desired.

We appreciate the invitation to present our views to you and we pledge our continuing cooperation in sustaining the GIWW as one of the compatible uses of the Gulf of Mexico.

The U.S. Army Corps of Engineers have and other federal agencies have numerous documents on the GIWW. The following documents are especially pertinent to the role of the State of Texas: *The Gulf Intracoastal Waterway in Texas - 1992,* prepared by the Texas Department of Transportation and "Marine Transportation Issues," A presentation before the Transportation Committee, Texas House of Representatives by the Marine Transportation Panel, Advisory Committee, Texas Transportation Institute, May 2, 1990.

ENG MAP 5a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NEW YORK
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TENNESSEE
NORTH CAROLINA
SOUTH CAROLINA
GEORGIA
ALABAMA
MISSISSIPPI
ARKANSAS
LOUISIANA
OKLAHOMA
TEXAS
FLORIDA
GULF OF MEXICO
ATLANTIC OCEAN
MEXICO
INSET A
INSET B
MAJOR WATERWAYS AND PORTS OF THE CENTRAL AND EASTERN UNITED STATES (INCLUDING ATLANTIC COAST GREAT LAKES MISSISSIPPI RIVER-GULF COAST)
LEGEND

STATEMENT OF
JOHN P. CAREY
GENERAL MANAGER, ADMINISTRATION
ALABAMA STATE DOCKS DEPARTMENT
ON BEHALF OF
GULF PORTS ASSOCIATION
BEFORE
THE UNITED STATES HOUSE OF REPRESENTATIVES
SUBCOMMITTEE ON OCEANOGRAPHY, GULF OF MEXICO AND
THE OUTER CONTINENTAL SHELF
FOR
MERCHANT MARINE AND FISHERIES
HONORABLE SOLOMON P. ORTIZ, CHAIRMAN
CORPUS CHRISTI, TEXAS, APRIL 23, 1993

Mr. Chairman:

I am please to appear before this committee to testify on the federal government's role in preserving and improving the economic, ecological and aesthetic values of the Gulf of Mexico.

In preparing this testimony, I was faced with the dilemma as to who I was representing. My focus became twofold. One was that of the environmental concerns of the national deep water ports and their relationship to the Gulf of Mexico program. Second was the need to represent the Alabama State Docks as an econmic generator for the State of Alabama and our involvement with the Gulf Ports Association.

As my testimony developed; however, it became evident that my role should facilitate our mutual need to achieve communication, education and coalition building amongst the interests represented at this hearing.

Water transportation is the most efficient, safest and environmentally sound mode of transportation. It creates less social disruption and urban transportation distress than highway, rail or air transportation.

The cost to move one ton of cargo one mile is 2.6 cents by rail, ten cents by truck, but only seven tenths of one cent by water.

Our national deep water ports move approximately 95% of all U. S. exports. The dollar impact generated for the federal government from waterborne trade for Fiscal Year '92 has recently been documented in a GAO study. Given that these statistics have been provided to you in a previous hearing, I will not adress them today. However, in looking solely at the 26 members of the Gulf Ports Association, we contribute over forty billion dollars to the nation's economy annually. Almost five hundred thousand jobs can be attributed directly or indirectly to Gulf Port activities. Of the nation's top twenty ports in total tonnage, eleven are located on the Gulf.

Port facilities are extremely capital intensive. In order to compete in the global economy, ports must continue to expand and provide the facilities to meet our customers' future demands.

With this in mind, ports are faced with several major challenges. Public ports generally must operate on a competitive basis without direct public financial assistance. We are faced with an aging infrastructure requiring constant rehabilitation and renovation. We must diversify our source of revenue which in turn leads to the need for financing to support capital expansion. Finally, for the purposes of today's hearing, we are committed to seek a balance between economic development and environmental concerns.

With these facts in mind, port associations have been actively developing a statement of environmental policy.

Our statement includes the following principles:

We believe that public ports benefit from healthy land and water resource ecosystems and bear a special responsibility to safeguard and preserve them for future generations.

We believe coastal resource protection is essential to the vitality of the economy. Our ability to generate economic development is dependent upon achieving environmental protection goals in a cost effective fashion.

We believe priorities should be established to insure maximum environmental benefit at the lowest reasonable cost because it is important to the quality of life on the Gulf, and not what is just politically or socially popular.

We believe pollution should be prevented at its source. A recent article in the CONSERVATIVE DIGEST reviewed the history of industrial development when waterways were used as convenient dumping grounds to shunt waste out the "back door". Gulf ports have been the recipients of such pollution and are the victim of a historical disregard as to the cumulative impact of such discharges. Therefore, we support enhancement of federal, state and local pollution initiatives to prevent and control pollution at its source.

We believe enhanced efforts should be made to limit nonpoint run off and other persistent sources of pollutants to our nation's waterways. Cleanup cannot be fully effective until control of nonpoint agricultural and urban runoff, storm water and combined sewer overflows and the discharge of toxic or other persistent pollutants into the waterways is achieved.

We believe in the cooperation with other groups to implement pollution controls. The port community is committed to assist appropriate regulatory authorities and to participate in appropriate regional planning and coastal zone management programs. Plans that are developed must be realistical, implementable and should identify available funding sources.

We believe polluters should be required to pay for the cleanup of contaminated sites. As previously stated, the port community is frequently the victim of such pollution. All too often, a port does not have the financial resources to take appropriate remediation action. When appropriate action is attempted, it is often impossible to recover the costs, either from the polluters or through future economic development.

We believe federal funding must be provided to implement environmental laws. State and local government and, in turn, the port community is faced with complying with mandates under the Clean Water Act , the Toxic Substance Control Act, the Water Resources Development Act and a multitude of other environmental laws and regulations. No new mandates should be imposed without comparable funding increases.

We believe in the need for a national dredged material management policy that recognizes the necessity for timely, cost effective and environmental protective dredging of our navigable waterways and ports. Disposal of dredged material consistent with the requirements of the London Convention and the Clean Water Act is required. The implementation of these laws must consider all disposal options that are environmentally responsible and economically feasible. This includes open water placement when dredged material meets appropriate scientific criteria. The London Convention encourages productive beneficial uses of uncontaminated dredged material. The senior management level of federal agencies has recently begun to recognize and articulate that dredged material is a valuable resource not a waste product. Federal policy should direct federal agencies at the field level to seek out and fund beneficial usage of dredged material wherever practical. In the state of Louisiana, elements of the Coastal Wetland Planning, Protection and Restoration Act (Title III, Public Law 101-646) demonstrates the results of such efforts by federal and state agencies.

We believe environmental permitting should be streamlined. The current process all too frequently introduces unnecessary, counterproductive and costly project delays. Timelines need to be established and enforced.

We believe the protection and enhancement of wetlands through the establishing of mitigation banks is a cost effective method of encouraging the preservation of wetlands. The development of alternative projects such as artificial reefs and disposal islands can mitigate for habitat impacts of port development. The unquestioned success of Gaillard Island in Mobile Bay and the offshore berm at the mouth of the Mobile Ship Channel are excellent examples of this principle.

We believe in the use of international regulations to control air emissions from marine vessels. Given that 96 percent of U. S. international trade is carried by foreign flag vessels, such regulation is more appropriate at the international level.

In summary, the Gulf Ports believe that given a level playing field, we can compete with any port range in the United States and that the United States can compete in the global economy. We urge that:

- Legislation be adopted requiring that all environmental regulations be established only after consideration of costs and benefits;

- Wetland regulations recognize that for some water dependent activities, such as port development, some impacts cannot be avoided, and cost effective mitigation banking is the best way to met the goal of "no net loss";

- Permitting regulations be simplified and the process streamlined;
- The U. S. Army Corps of Engineers be identified as the federal advocate for port programs and;
- As environmental regulations become more stringent, federal capital be provided to offset the associated increase in costs.

Once again let me thank you for allowing me this opportunity to testify on behalf of your efforts for the Gulf of Mexico.

JOHN P. CAREY
GENERAL MANAGER OF ADMINISTRATION
ALABAMA STATE DOCKS DEPARTMENT

John P. Carey presently serves as the General Manager of Administration for Alabama State Docks Department, Mobile, Alabama.

In this position, he is responsible not only for the normal administrative functions associated with this position, but is also responsible for liaison with federal, state, regional and local government entities as it deals with environmental and legislative matters.

John presently serves a a member of the Harbors, Navigation and Environmental Committee of the American Association of Port Authorities and is on the Editorial Advisory Board for World Dredging Magazine. He is a member of Alabama Coastal Erosion Task Force and is an active participant in the on-going Tri-State Comprehensive Water Resources Study.

John retired from active duty with the U. S. Army Corps of Engineers following 26 years of service in July 1990. His last assignment was Deputy Commander, Lower Mississippi Valley Division, and Secretary of the Mississippi River Commission. While in this position, he had the opportunity to participate in and review the products of many studies dealing with water resource issues impacting on the Gulf of Mexico.

He is a graduate of Texas Tech University, Lubbock, Texas, with a B. S. degree in Civil Engineering and a Master's of Business Administration from George Washington University, Washington, D. C.

STATEMENT OF SHARRON STEWART

TEXAS REPRESENTATIVE TO
THE GULF OF MEXICO PROGRAM

FIELD HEARING

BEFORE THE
SUBCOMMITTEE ON OCEANOGRAPHY, GULF OF MEXICO,
AND OUTER CONTINENTAL SHELF

OF THE COMMITTEE ON MERCHANT
MARINE AND FISHERIES

UNITED STATES HOUSE OF REPRESENTATIVES
APRIL 23, 1993

Mr. Chairman and members of the Committee, I would like to thank you for the opportunity to present this testimony in support of protecting the Gulf of Mexico.

I am a Texas representative to the Gulf of Mexico Program appointed by the Governor. I am also on the Executive Committee of the Galveston Bay Foundation and the Gulf Coast Fishermen's Environmental Defense Fund.

The Gulf of Mexico is an especially important resource to the Nation. The United States encloses the Gulf of Mexico on three of its sides with a coastline of 1,631 miles. It has been estimated that approximately one-sixth of the entire United States population live in states bordering the Gulf of Mexico.

The Gulf accounts for a great deal of natural gas and oil produced offshore of the United States. This oil and gas production generates federal revenues that are exceeded only by revenues from the Federal income tax.

The Gulf contributes approximately $20 billion per year to the economy of the United States from tourism-related dollars and one-third of the marine recreational fishing activities in the continental United States are in the Gulf of Mexico, accounting for more than $2 billion of tourist expenditures annually in Texas alone.

A significant portion of the shipping of imports and exports handled by ports of the United States are handled by ports along the Gulf of Mexico. Eleven of the twenty ports that handle the greatest quantity of tonnage in the United States border the Gulf of Mexico.

In addition, the Gulf provides important habitats for the many species which are commercially important to the national seafood industry - including shrimps, crabs, redfish, speckled trout, and menhaden. Approximately 18 percent of the commercial fish landed in the United States are produced by the Gulf of Mexico, yielding more than two and a half times the amount of shrimp that is produced by all other shrimp fisheries of the United States combined.

Almost all of the Gulf's commercial fish and shellfish rely on estuaries (wetlands and open water) for at least part of their life cycle.

More than half the total acreage of wetlands of the continental United States borders the Gulf of Mexico. The Gulf provides critical estuarine habitat for large populations of finfish, shellfish, waterfowl, shorebirds, colonial nesting birds, and 75 percent of the migratory waterfowl that traverses the United States.

Sadly, the Gulf of Mexico is showing signs of environmental quality deterioration, including the accumlation of excess nutrients and toxic substances.

Concerns over human health have resulted in the permanent or conditional closure of 3.4 million acres, more than 50 percent of shellfish growing areas along the coast of the Gulf of Mexico.

The region of the Gulf of Mexico is experiencing extensive losses of marshes, mangroves, and seagrass beds that are critical and highly productive habitat for a wide variety of estuarine and marine organisms.

The Gulf of Mexico is uniquely susceptible to catastrophic weather events that accelerate coastal erosion, destroy wetlands and other critical habitat, hamper economic activity, and threaten shipping and commerce.

All Gulf states have serious erosion problems. Parts of Louisiana retreat 65 feet or more per year, while erosion rates of 15 feet per year can be found in many other areas of the Gulf.

Several rapidly eroding barrier islands are expected to completely disappear within the next 30 years. Such are the primary defense for wetlands, estuaries and bays against storms and other open-Gulf effects.

Maintained Gulf beaches and dunes are the best protection against hurricanes and other storms.

Inherent oceanic and atmospheric patterns around the Gulf of Mexico render the marine environment of the Gulf an integral component of the environment of the Wider Caribbean Region. Exchanges between the Gulf of Mexico and the Atlantic Ocean are limited and therefore pollutants tend to accumulate and concentrate in the Gulf.

Of primary importance is marine debris which washes ashore. A 1975 estimate puts the trash on the Gulf shoreline from all sources to be in excess of 14 billion pounds. Today's estimate would be higher.

Water from two thirds of the land area of the forty-eight contiguous states plus a part of Canada and over half of the Republic of Mexico enters the Gulf of Mexico, having a significant impact on the Gulf.

The Gulf of Mexico is a national treasure that is beset by environmental deterioration that is so extensive and complex that no single Gulf State or Federal agency can address the environmental problems alone.

The long-term deterioration of the environmental quality of the Gulf of Mexico constitutes a threat to the national interest.

What we need is to expand public awareness and knowledge of the importance of the Gulf of Mexico. This hearing is a step in the right direction, involving local experts on coastal issues and being located in a coastal city.

We also need to promote a sense of stewardship for Gulf resources and foster public/private partnerships for the wise use of these resources.

Everyone on this panel, I know, is actively involved in the protection of economic and environmental coastal resources in Texas.

Specifically, we need Congressional legislation that codifies and improves the existing Gulf of Mexico Program. We have a program already in existence. We do not need to reinvent the wheel, as it were. There may be a need to reorganize the program but we should build on what is already in place.

A Gulf Board should be established and charged with the development of a Gulf plan. The Gulf Board should consist of no more than 15 - 20 people and include representatives not only from state and federal government but also local coastal elected officials. This local input is of vital importance if we want a program that will work. No one knows the local Gulf issues better than the local elected officials. It is their job to be informed of their constituency's views.

There needs to be a direct link established between any plan developed by the Gulf Board and the plan implemented by the federal agencies. And we need Congressional authorization of appropriations for the development and implementation of the Gulf plan.

In closing I would like to say that as population growth continues in the Gulf states, it will become more imperative that we comprehensively consider and address critical Gulf issues in manner that involves local, state, and federal officials.

TEXAS
PARKS AND WILDLIFE DEPARTMENT
4200 Smith School Road • Austin, Texas 78744 • 512-389-4800

ANDREW SANSOM
Executive Director

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Ft. Worth

May 3, 1993

Ms. Wilma Anderson
Executive Director, Texas Shrimp Association
P. O. Box 1077
Aransas Pass, Texas 78336

Dear Ms. Anderson:

The Texas Parks and Wildlife Department would like to invite you to participate in a workshop to map the living natural resources of the Lower Laguna Madre system. The workshop is scheduled for May 25 at the University of Texas-Pan American Coastal Studies Laboratory in South Padre Island.

Oil Spill Response Mapping

The Department is preparing maps of the biological resources of selected Texas estuaries for General Land Office oil spill response personnel. This year we will generate maps of the Galveston Bay System, Corpus Christi Bay System, Lower Laguna Madre, and Sabine Pass area, based on data gathered during a series of Workshops.

On May 25, we need the help of people experienced with the biota of the Lower Laguna Madre in order to identify and place proper priority on protecting its natural resources in the event of a spill of oil or some hazardous substance.

In addition to the short-term need for oil spill response maps, the information gathered during these meetings will be the first step towards a long-term, more refined mapping program, with management and conservation applications. Within this decade, we hope to use GIS technology to map several lines of natural resource data for the entire Texas coast.

During most of the meeting, we will work as small groups concentrating on specific topics in subsections of the Lower Laguna Madre. The groups will roughly map the distribution of resources on USGS 1:24000 quadrangles, taking seasonality and other variables into consideration. Though accurate mapping is our ultimate goal, the meeting will not emphasize high resolution as much as setting priorities among areas for protection in the event of a spill. Department personnel will direct and record the discussions.

The Department will bring other available maps and information to facilitate discussion. We would appreciate receiving any additional supporting literature or other documentation that participants can provide: published or unpublished articles, reports, maps, or notes.

The meeting is scheduled for Tuesday, May 25, in the lab classrooms of the University of Texas-Pan American Coastal Studies Laboratory in South Padre Island. A map is attached.

The meeting will take all day. If your schedule is difficult, you are wlecome to attend for only part of the day. After a brief orientation, we will work in small groups. The end of the day will be devoted to specific problems and synthesis. A box lunch will be provided. A preliminary schedule of discussion sections and an orientation map are attached.

I hope you will be able to participate in this workshop. I believe this is an important part of our effort to protect the natural resources of the Laguna Madre from damage by chemical spills. If you have any suggestions for the workshop, please let me know at (512)389-4503 or call Annie Walton at (512)448-4314. Suggestions for future meetings are also invited.

Sincerely,

David R. Sager, Ph.D.
Chief, Environmental Quality Branch
Resource Protection Division

attachments

AHW/DRS

Texas Shrimp Association
Environmental Director
Postal Drawer AT
Port Isabel, Texas 78597

May 10, 1993

Mr. Andy Mangan, Special Assistant
Office of the Commissioner
Texas General Land Office
1700 North Congress Avenue
Austin, Texas 78701

In re: South Texas Space Consortium

Dear Mr. Mangan,

I had full intentions of attending our very important meeting today in Austin, but I am prevented from doing so by personal illness. I would, however, like to assure Dr. Hegwood and the committee of my full support, as well as that of the Texas Shrimp Association.

I have continued to work for the full funding and implementation of our plan, supporting the project to all the appropriate agencies and lawmakers with whom I regularly work in official capacities, both professionally, as a staff member of Texas Shrimp Association, and through those other committees to which I have been appointed.

In the way of a report to my fellow board members, I have been in communication with Dr. Douglas Lipka, Ph.D., Acting Director of the Gulf of Mexico Program, as a member of the Subcommittee on Living Aquatic Resources, Technical Steering Committee, to tell him of my involvement for TSA, and of our group's support; I have also included this element in the recommendations to the head of EPA through the Integrated Border Environmental Plan Public Advisory Committee, as the Gulf of Mexico representative. Last month, I received word that I will be serving the Department of Commerce on the Habitat Subwork Group to the Gulf of Mexico Fisheries Management Council, and will report to this group my support of this project, requesting action in the form of a letter of support.

Finally, I have included our project in testimony I gave to House Merchant Marine and Fisheries, Subcommittee on Oceanography, the Gulf of Mexico, and the Outer Continental Shelf, chaired by The Hon. Solomon P. Ortiz, who also serves on House Armed Forces Committee, indicating support for the plans, and asking for the facilities as described in our documents. I made this a part of my oral testimony, and submitted it for the written record as well. I hope you have a fine day with our lawmakers. If I can be of further assistance during the meeting for assignment, or to make telephone calls today, I will be at home, and can telephone or fax, as needed. Thank you for all your fine work, and for your patience with me.

Very truly yours,
Mrs. Ronald Boudreaux
(210) 943-2788

cc: Mrs. Wilma Anderson,
Executive Director,
and Agent of the Board,
Texas Shrimp Association

Texas Shrimp Association
Environmental Director
Postal Drawer AF
Port Isabel, Texas 78597

May 21, 199

Dr. Douglas Lipka, Ph.D.
Acting Director, Gulf of Mexico Program, EPA
Chairman, Technical Steering Committee
Bldg. 110 John C. Stennis Space Center
Stennis Space Center, Mississippi 9529

Dear Dr. Lipka,

It was very good to see you at the hearing in Corpus Christi in April. I have finished my follow-up questions, and am now awaiting the copy of my verbal testimony to make the corrections. I have been required to do the habitat analysis from Key West to Brownsville, and to speak on the habitat-related aspects of the species that are being considered in the by-catch issues, especially transboundary straddling-stocks whose life-cycle includes time spent in critical life-stages in the whole gulf, such as red snapper, whose larvae drifts in the microlayer with the shrimp larvae of the marine species: Mexican brown, gulf white, and gulf pink, the lagoon-dependent species, using areas of the Florida Keys, the Dry Tortugas, the lagoons of the Yucatan, and with significant distribution as far north as the Lower Laguna Madre, right across the street from my house, (I am looking at the bay as I type this letter)!

I am sending on to you some information we received on the oil spill planning for critical habitat areas of our system. I would appreciate your Fed X'ing out today the latest information you have on the marine species which use the Lower Laguna Madre, the Brazos Santiago Pass, the mouth of the Arroyo Colorado, which has a 12-mile tidal zone, and is a state-designated shrimp sanctuary; South Bay, and the mouth of the Rio Grande, which has a 19-mile tidal, mixing zone. I participated in the meeting on this in Galveston Bay; we designated the priority for deployment of booms, etc., in this ranking of importance for the commercially harvested-hunted, capture-species: nursery, staging, and routes of migration to the open sea, (passes, etc., for in-bay/estuary/lagoon systems); of course, the passes are first for the offshore catastrophic spills, including the mouthes of rivers, and formations like the Arroyo Colorado, which is a "so-called branch of the GIWW," federally-maintained by the U.S. Corps, and used to transport fuels, chemicals, liquid wastes, and other things.

Page two, letter to Dr. Lipka, TSC, GOMP, EPA, NDB for TSA
5/21/9

I have not heard a word from Herb Kumfp since our work on the action plan was submitted for our Subcommittee on Living Aquatic Resources. I did, however, receive an inquiry from the Southeast Region of NMFS, asking for my information I had given on red snapper landings, and the reportings, at the TSA Convention in Corpus Christi in March of this year:

Prior to 1984, landings were reported from the whole system, since this fish is transboundary in its life-cycle habitat use. After that year, the landings for just the U.S. were used by NMFS for management purposes, and regulations. It then appeared that the fish was "in trouble;" however, the NOAA Atlas of the Gulf of Mexico, published in late 1986, shows a biomass of the specie in the gulf of 15,000,000,000 metric tonnes, (fifteen billion). If one adds the U.S. commercial harvest, the Mexico commercial harvest, and uses an "educated guess" as to the capture-hunt fishery-take, we are not over-harvesting nor over-hunting on a systems-wide basis. However, the concentration of huge numbers of sportsmen on the artificial fishing-spots could "fish out" an area, since their take is much harder to monitor, and there is always a "black market" for fish taken in the name of sport, and sold. This is not true for the legitimate harvester, whose catch is processed through controlled, regulated food operations. Also, if in these artificial habitats created for reef-animals, I am not comfortable with the amount of fuel and/or fuel - mixed-with-oil that huge concentrations of motor boats, and large head-boats, or deep-sea fishing-excursion boasts, equipped with automatic bilge pumps, that may be concentrating at these sites, for there are sea turtles, very sensitive to hydro-carbon poisoning, and marine mammals there, too.

On the subject of capture-hunt, we should take a look at gear on these recreational "fishing holes" we are creating for heavy use: there are size restrictions on the fish; however, many sportsmen use electric reels, which "grind away," at an even clip, with no effort required of the fisherman, and bring the fish from deep-water up too fast. These animals, over-sized for limits or not, are killed by the decompression. Maybe the use of electric reels should be prohibited, in these areas where large numbers of sportsmen are sharing the artificial habitat, (and not necessarily in the spots difficult for the public, not the steward-harvesters, to reach).

I look forward to hearing from you. Keep the faith!

Tu amiga,
Duyaun Boudreaux
Mrs. Ronald Boudreaux
(210) 943-2788 call first to FAX

P.S. I did not address the take from rig-blasts; fishermen and rig personnel are allowed to pick up the stunned red snapper, dress them out, and sell them as fillets back on shore...

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